

# Caudron's 1979 Knot Table

While I was paying little or no attention to mathematics (1983-2013) a good bit of misinformation was spread about Conway's tabulation of non-alternating prime knots with eleven crossings. In particular, it was claimed in a number of published books and papers that he had found them all – a myth re-told in a recent biography.

Here are some relevant excerpts from Alain Caudron's 1979 preprint and related correspondence with me.

## References

Adams, “Why Knot?” (Key Curriculum Press, 2004), page 38.

Caudron, Structuration de la Classification des Noeuds et des Enlacements, Notes de recherche 1976/1977/1978, E.N.S.E.T. De Tunis (1979), page 74; and subsequent Orsay Prepublications 81T01, 82-04 and 89-39.

Conway, in “Computational Problems in Abstract Algebra” (Pergamon Press, 1969), page 357.

Gardner, “The Last Recreations” (Springer-Verlag, 1997), page 73.

Perko, Remarks on the History of the Classification of Knots, Banach Center Publications 103 (2014), page 248.

Roberts, “Genius at Play” (Bloomsbury, 2015), page 30.

NOTES DE RECHERCHE 76/77/78

STRUCTURATION  
DE LA  
CLASSIFICATION  
DES  
NOEUDS ET DES ENLACEMENTS

1979

A. CAUDRON

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PREFACE

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Le problème de la classification des Noeuds et des Enlacements abordé par TAIT vers les années 1880, reste à ce jour, un problème sérieux, puisque l'article qui suit montre que les travaux publiés par CONWAY en 1969 sont incomplets, et contiennent quelques duplications. Or depuis, TAIT et même CONWAY, les mathématiciens disposent d'une science qui s'est largement développée : l'informatique..

J'ai donc dans les notes qui suivent voulu structurer la classification des Noeuds et des Enlacements, pour trouver des algorithmes de construction basés sur la chirurgie (ROLFSEN) qui soient informatisables ; car, en effet, le travail effectué par CONWAY marque la limite raisonnable de l'investigation humaine et manuelle en ce domaine.

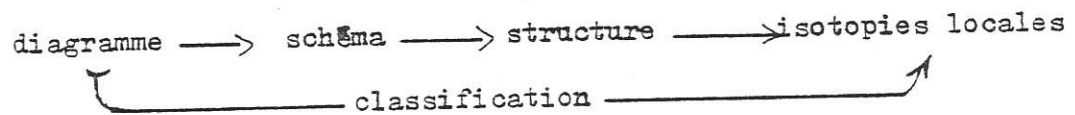
Une idée saine de cette population doit pour des éléments à 50 croisements, situer le recensement à environ  $10^{50}$  habitants, ce qui d'ailleurs montre, que même avec l'aide d'ordinateurs puissants cette limite constitue déjà un rêve actuellement inaccessible, ne considérant l'informatique que comme un moyen expérimental nécessaire à la recherche théorique, et non comme un objet fait pour battre certains records du monde dans le domaine mathématique.

Ainsi, j'ai donc été amené à rechercher une forme générale pour un diagramme [associé à un Noeud (Enlacement)] de façon à trouver une structure sous-jacente qui ne soit pas modifiée par des isotopies locales, et très facilement accessible à partir d'un diagramme quelconque.

La méthode introduite dans le paragraphe 1, utilise la recherche des instructions de chirurgies de "type arborescent", et permet en plus, de retrouver cette structure sous-jacente préconisée. Les effets importants de cette structuration, sont d'abord de ne plus avoir à distinguer le nombre de

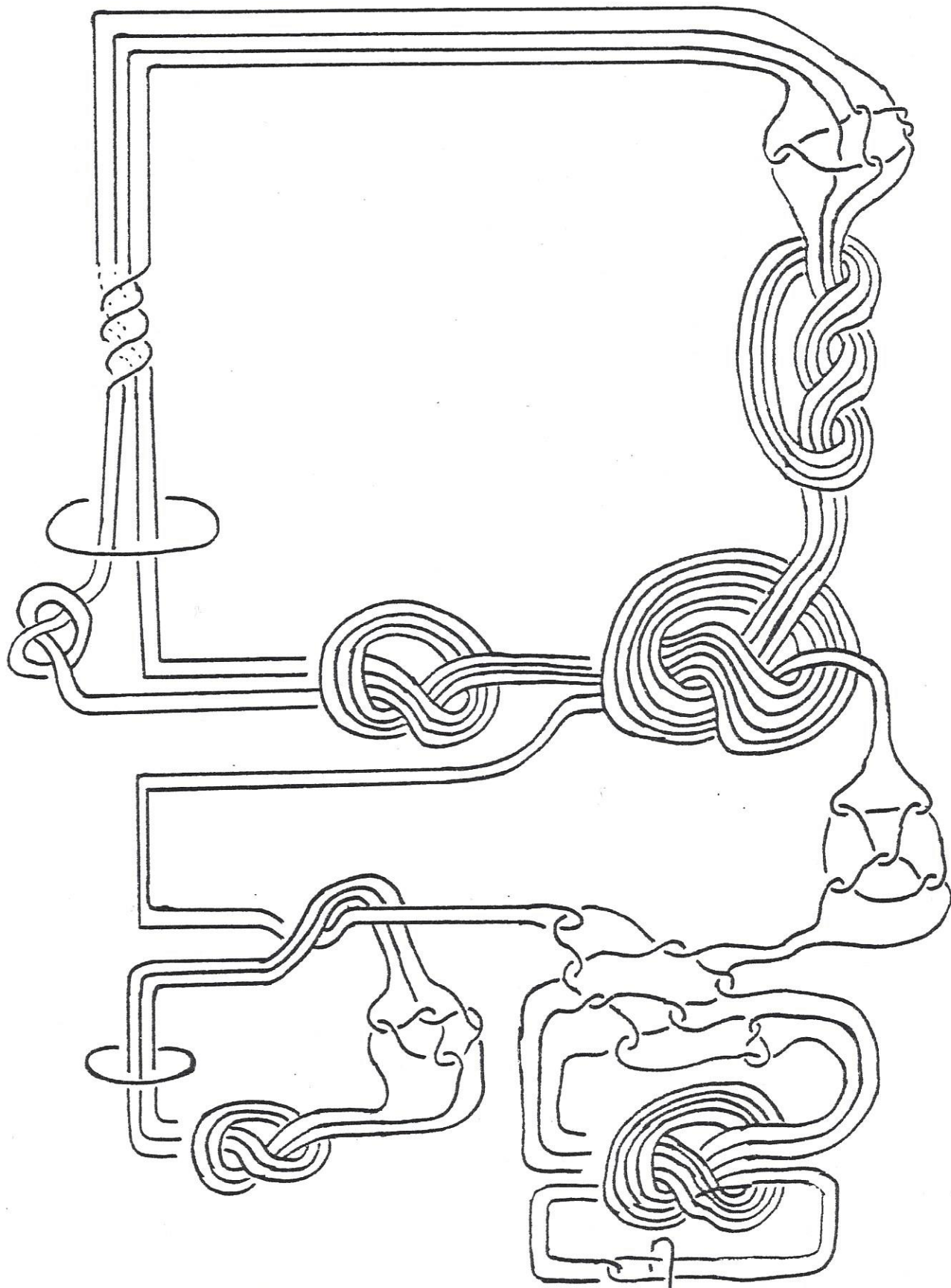
composantes, ni le nombre de croisements qui d'ailleurs sera parfois changé par rapport aux anciennes tabulations de façon à prendre pour chaque élément la meilleure structuration, c'est à dire l'instruction de chirurgie qui comportera un maximum d'arborescence.

L'identification d'un Enlacement (Noeud) peut donc se concevoir sous la forme d'un programme :

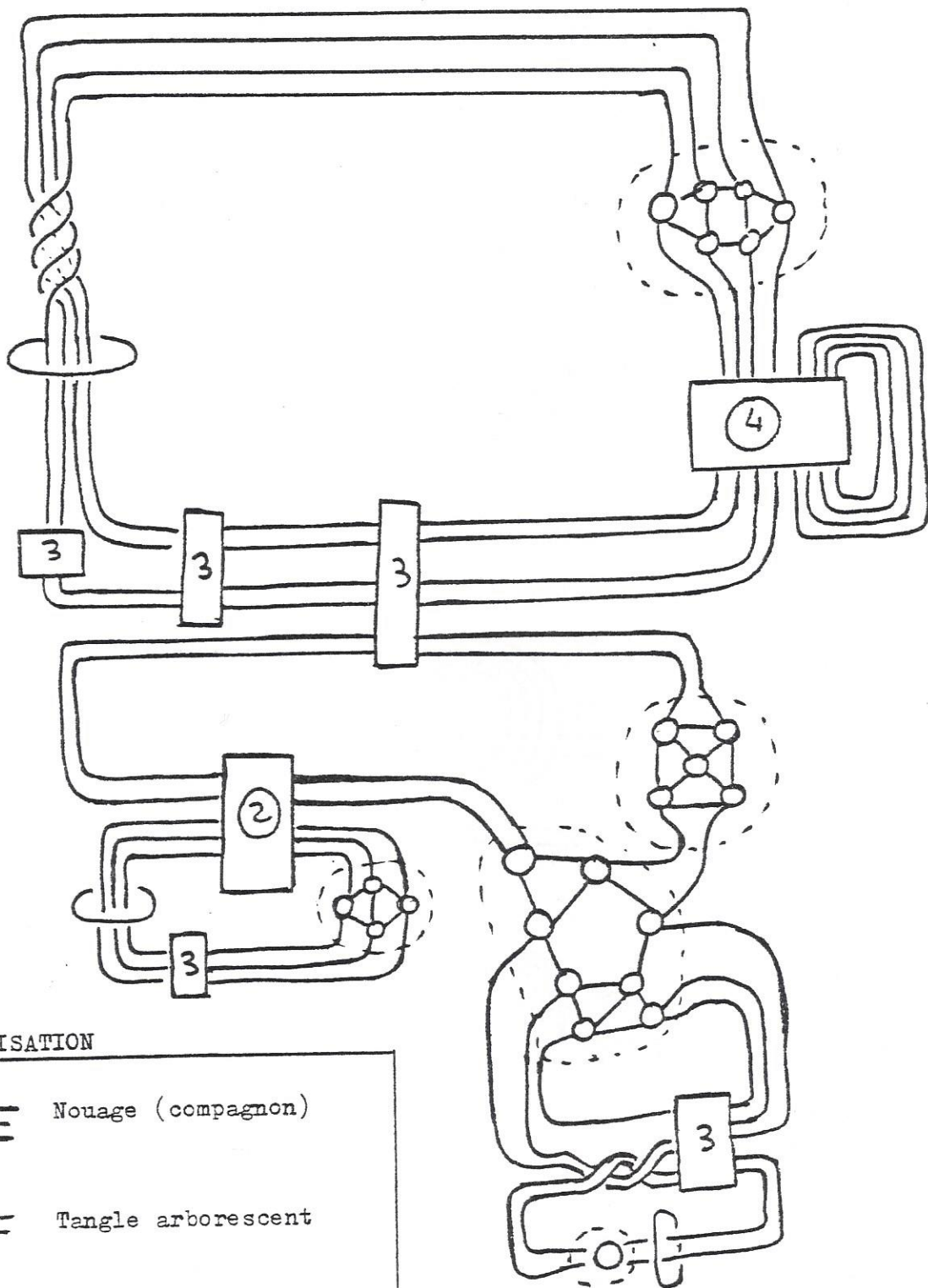


Cette structure générale qui apparaît donc dans la recherche de l'arborescence se présente pour un enlacement très facilement sous la forme suivante, construite sur un g-bretzel.

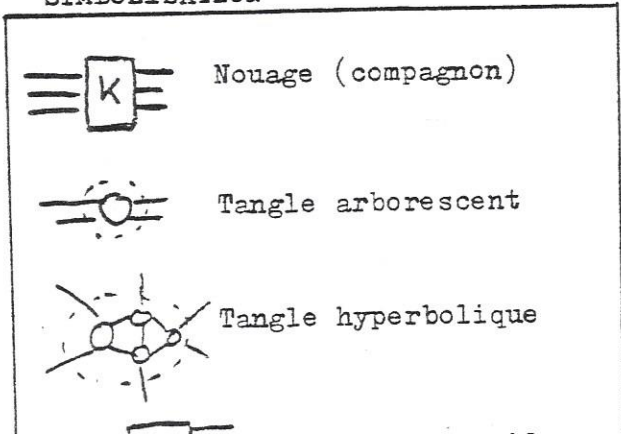
GRAPHE CARACTERISTIQUE. (diagramme)



à cet enlacement j'associe le schéma suivant :



SYMBOLISATION



Ce diagramme qui est très caractéristique pour ces enlacements, attire immédiatement quelques remarques.

PRIORITE:

Il apparaît immédiatement que la recherche de l'arborescence prime au niveau de la structuration.

TANGLES HYPERBOLIQUES:

Nous voyons apparaître en sous-jacence des parties arborescentes, des résidus formant des tangles généralisés à  $2n$  brins de libres que nous dirons "hyperboliques" (chapitre 2) ils apportent une notion bien plus générale que celle de polyèdre développée par TAIT, puis CONWAY.

COMPAGNONS:

Nous remarquons aussi l'apparition des "compagnons" préconisés par FOX, qui sont des éléments caractéristiques.

ANNEAUX:

Nous trouvons aussi un certain nombre d'anneaux qui seront aussi caractéristiques moyennant quelques précautions (chapitre 3).

FEDERALISATION:

J'ai donc dans les notes qui suivent décomposé l'étude de la structuration des Noeuds et Enlacements, en 3 parties :

1°) Le monde ARBORESCENT :

Monde des Noeuds et Enlacements ayant une instruction purement arborescente correspondant d'ailleurs aux bords des variétés plombées (Plombages).

2°) Le monde HYPERBOLIQUE PUR :

Déjà annoncé par les polyèdres de TAIT et de CONWAY mais irréductibles pour l'arborescence (notion plus stricte).

Le monde des COMPAGNONS :

Déjà mis en évidence par les Noeuds doublés de ROLFSEN, et dont les équivalences proviennent des deux précédents.

3°) Le monde GENERAL issu des trois précédents.

Dans cette structuration, le problème le plus délicat sera de sérier les intersections entre les différents mondes.

E.g)  $6^{XX}$  est le type même du passage entre arborescent et hyperbolique.

Note 1 : A ce jour, la génération automatique sur ordinateur du Monde Arborescent est en cours par M. LAI (ENSET-TUNIS).

Note 2 : Les titres des chapitres qui suivent correspondent à ceux des Notes personnelles que j'ai diffusées en 77/78/79.

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TABLES

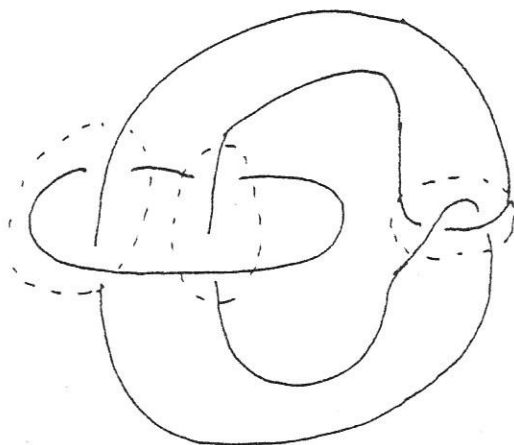
(COMMENTAIRES)

Dans les tables qui suivent, j'ai réordonné les Noeuds et Enlacements en fonction de leur structure, en donnant la préférence à la forme arborescente.

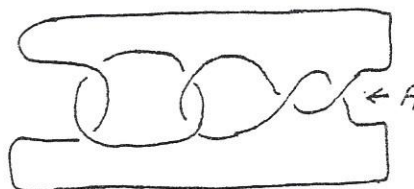
Je n'ai pas développé le sous-monde rationnel, celui-ci étant maintenant bien connu. (V. LAI)

L'ensemble des procédés et équivalences permet au lecteur de reconnaître rapidement un enlacement rationnel.

E, g)



Ici 3 ballons, nous avons donc un type plombage.



La bande centrale A portant +2



C'est le plombage linéaire, caractéristique du monde rationnel, ici, le 212 de CONWAY.

Je souhaite aussi que dans l'avenir les Tabulations soient plus fidèles aux notations, ainsi le  $9_{49}$  est noté dans ROLFSEN  $-20 : -20 : -20$ , en fait le diagramme doit être noté  $-20 : 2 : 2$  ce qui le rapproche plus naturellement du  $9_{39}$ .  
Nous avons d'ailleurs plus généralement :

PROPRIETE (b,c algébriques)

$$-20 : b : c \sim -20 : -b0 : -c0$$

Le lecteur trouvera dans les tables qui suivent :

- a) un diagramme type Conway
- b) les références aux anciennes tabulations :
  - T pour TAIT
  - L pour LITTLE
  - A pour ALEXANDER-BRIGGS

REMARQUE

Les noeuds n'ayant qu'un numéro d'ordre sont indexés par le numéro d'ordre donné par K. PERKO.

Le lecteur trouvera aussi dans le cas arborescent les principaux arbres standards, et un arbre orienté canonique, volonté de L. SIEBENMANN pour arriver à un représentant unique pour chaque classe d'équivalences, celui-ci pouvant d'ailleurs être obtenu à partir du programme d'équivalences, avec quelques précautions (Jumping de sommets, chaîne-équivalence).

MODIFICATION

Le lecteur remarquera qu'un certain nombres d'éléments ont été ajoutés, 5 enlacements et 4 noeuds par rapport aux tables de Conway.

Je remercie K.PERKO pour la confirmation des deux omissions :  $8^{\#} -30 : : 20$  et  $6^{\#} -210 : 3 : 2$

De même trois éléments ont été enlevés, deux enlacements  
et un Noeud (répétitions dans les tables de Conway).

$10_{161} \sim 10_{162}$  (ROLFSEN), duplication démontrée par K.PERKO, (AMS74)

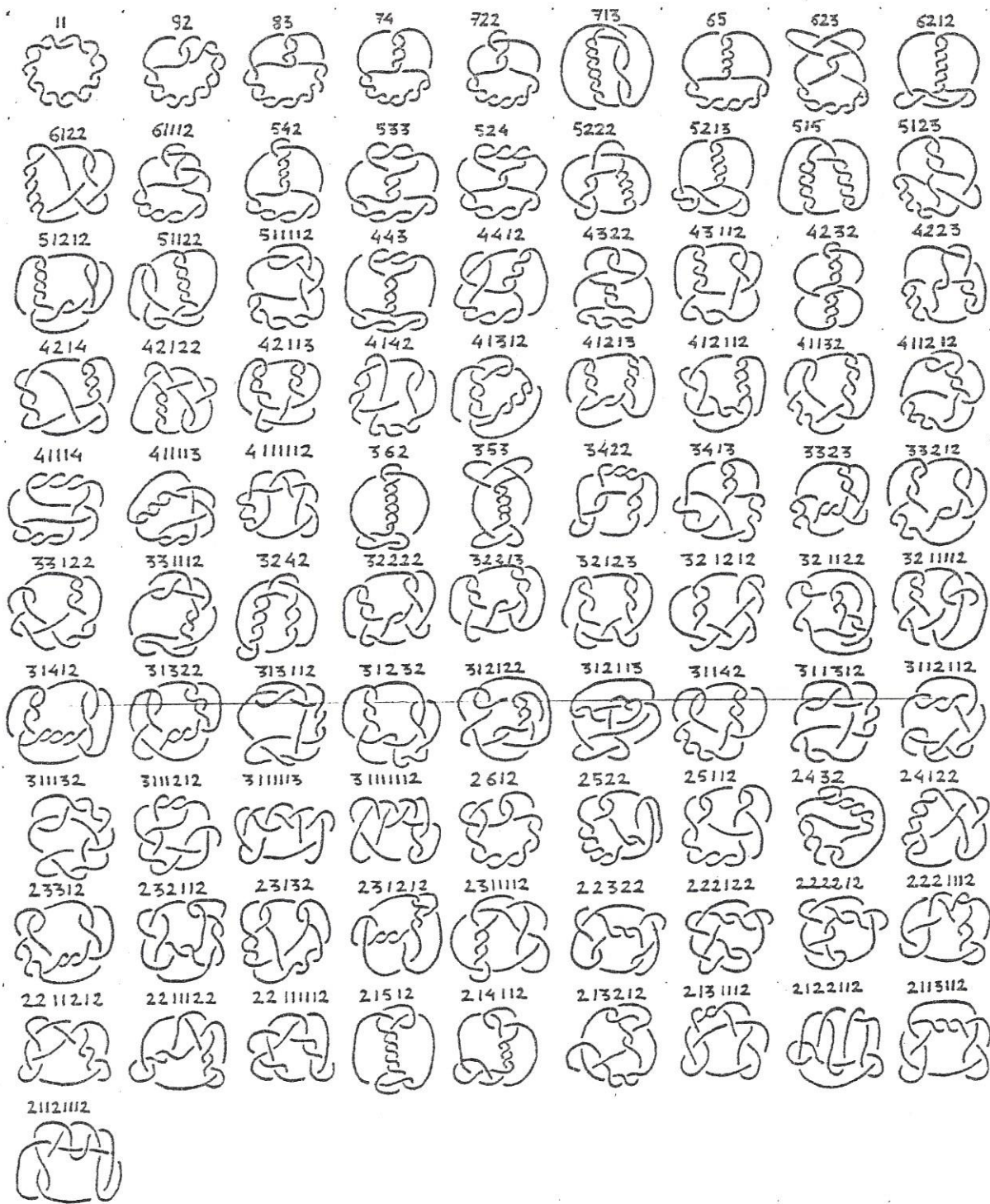
$10_{72}^3 \sim 9_{21}^3$

$8^{\#} -20 : -20 \sim 6^{\#} 2. -2 . -20 . 20$

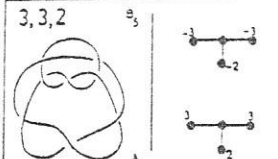
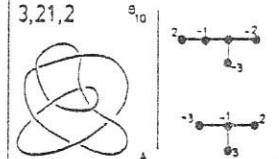
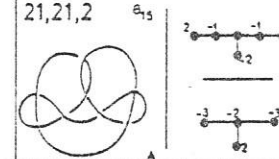
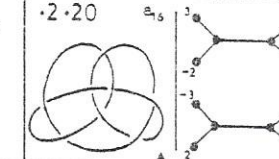
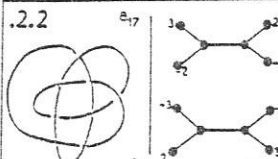
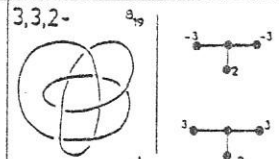
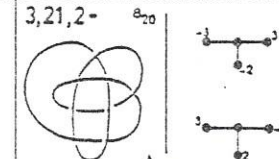
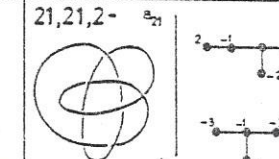
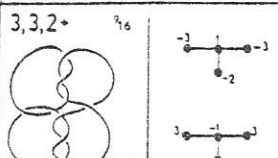
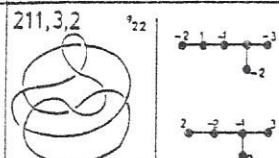
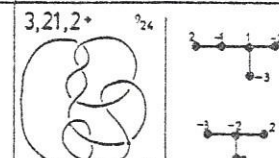
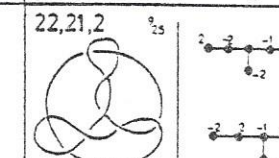
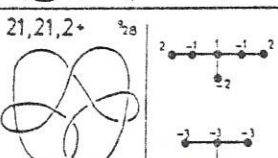
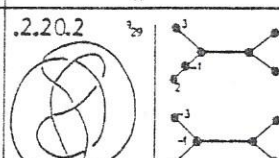
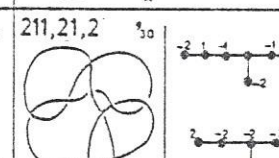
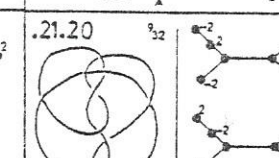
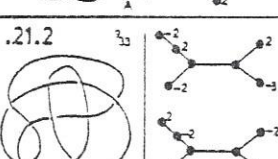
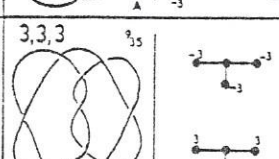
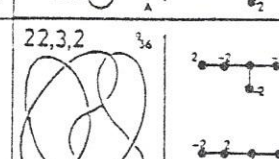
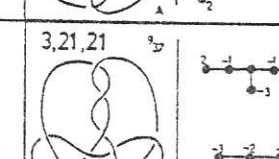
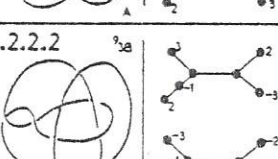
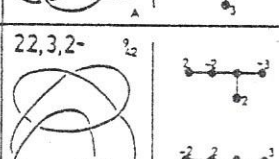
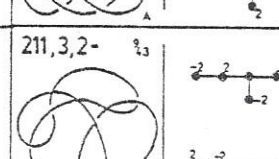
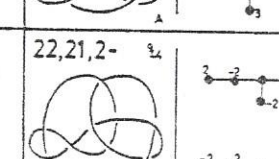
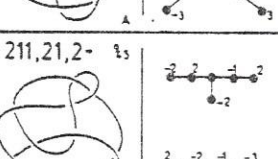
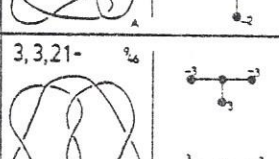
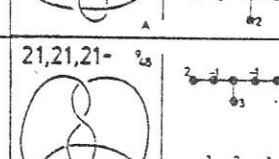


# NOEUDS RATIONNELS


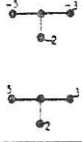
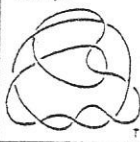
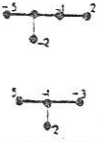

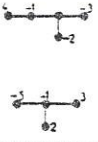

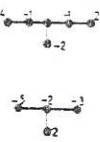

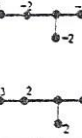
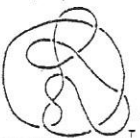
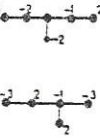

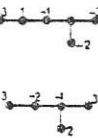




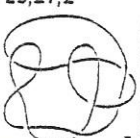
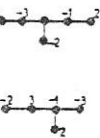


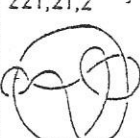
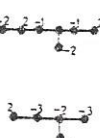

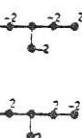

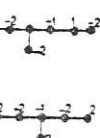
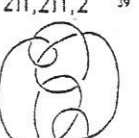
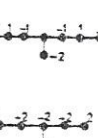
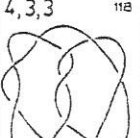
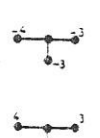
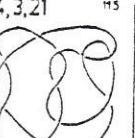


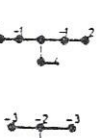

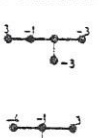


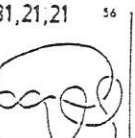
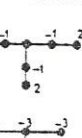
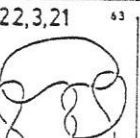
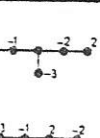
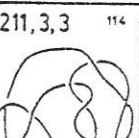
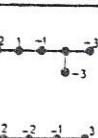
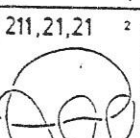
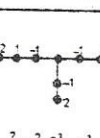
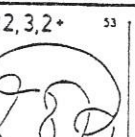
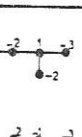
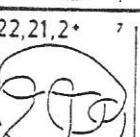
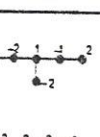
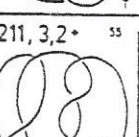
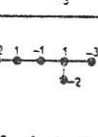
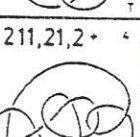
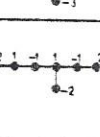
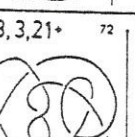
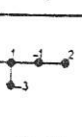
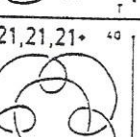
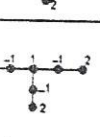
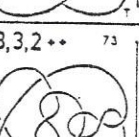
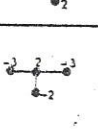
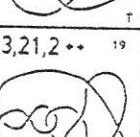
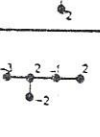
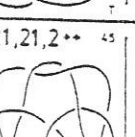
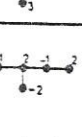
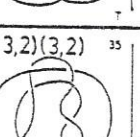
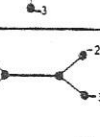
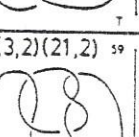
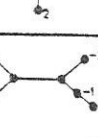
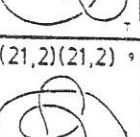
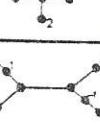
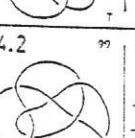
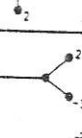
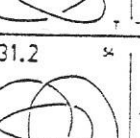
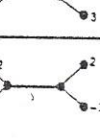
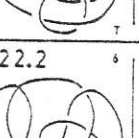
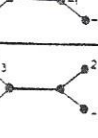
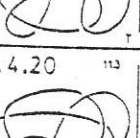

11c



# NŒUDS ARBORESCENTS

$3,3,2$ $\theta_3$ 	$3,21,2$ $\theta_{10}$ 	$21,21,2$ $\theta_{15}$ 	$\cdot 2 \cdot 20$ $\theta_{16}$ 
$.2,2$ $\theta_{17}$ 	$3,3,2-$ $\theta_{19}$ 	$3,21,2-$ $\theta_{20}$ 	$21,21,2-$ $\theta_{21}$ 
$3,3,2+$ $\theta_{16}$ 	$211,3,2$ $\theta_{22}$ 	$3,21,2+$ $\theta_{24}$ 	$22,21,2$ $\theta_{25}$ 
$21,21,2+$ $\theta_{28}$ 	$.2,20,2$ $\theta_{29}$ 	$211,21,2$ $\theta_{30}$ 	$\cdot 21,20$ $\theta_{32}$ 
$.21,2$ $\theta_{33}$ 	$3,3,3$ $\theta_{35}$ 	$22,3,2$ $\theta_{36}$ 	$3,21,21$ $\theta_{37}$ 
$.2,2,2$ $\theta_{38}$ 	$22,3,2-$ $\theta_2$ 	$211,3,2-$ $\theta_3$ 	$22,21,2-$ $\theta_4$ 
$211,21,2-$ $\theta_5$ 	$3,3,21-$ $\theta_6$ 	$21,21,21-$ $\theta_8$ 	

# NOEUDS ARBORESCENTS

5,3,2 <sup>123</sup>  T 	5,21,2 <sup>116</sup>  T 	41,3,2 <sup>36</sup>  T 	41,21,2 <sup>70</sup>  T 
32,3,2 <sup>75</sup>  T 	32,21,2 <sup>18</sup>  T 	311,3,2 <sup>109</sup>  T 	311,21,2 <sup>57</sup>  T 
23,3,2 <sup>103</sup>  T 	23,21,2 <sup>50</sup>  T 	221,3,2 <sup>64</sup>  T 	221,21,2 <sup>5</sup>  T 
22,22,2 <sup>47</sup>  T 	22,211,2 <sup>42</sup>  T 	211,211,2 <sup>39</sup>  T 	4,3,3 <sup>118</sup>  T 
4,3,21 <sup>115</sup>  T 	4,21,21 <sup>59</sup>  T 	31,3,3 <sup>100</sup>  T 	31,3,21 <sup>23</sup>  T 
31,21,21 <sup>56</sup>  T 	22,3,21 <sup>63</sup>  T 	211,3,3 <sup>114</sup>  T 	211,21,21 <sup>2</sup>  T 
22,3,2* <sup>53</sup>  T 	22,21,2* <sup>7</sup>  T 	211,3,2* <sup>55</sup>  T 	211,21,2* <sup>4</sup>  T 
3,3,21* <sup>72</sup>  T 	21,21,21* <sup>40</sup>  T 	3,3,2** <sup>73</sup>  T 	3,21,2** <sup>19</sup>  T 
21,21,2** <sup>45</sup>  T 	(3,2)(3,2) <sup>35</sup>  T 	(3,2)(21,2) <sup>59</sup>  T 	(21,2)(21,2) <sup>9</sup>  T 
.4.2 <sup>90</sup>  T 	.31.2 <sup>54</sup>  T 	.22.2 <sup>6</sup>  T 	.4.20 <sup>113</sup>  T 

# NŒUDS ARBORESCENTS

<p>.31.20<sup>17</sup></p>	<p>.22.20<sup>46</sup></p>	<p>.21.21<sup>13</sup></p>	<p>.21.210<sup>12</sup></p>
<p>.3.2.2<sup>95</sup></p>	<p>.3.2.20<sup>33</sup></p>	<p>.21.2.20<sup>44</sup></p>	<p>.3.20.2<sup>111</sup></p>
<p>.30.2.2<sup>97</sup></p>	<p>.210.2.2<sup>8</sup></p>	<p>.2.21.2<sup>84</sup></p>	<p>.2.210.2<sup>86</sup></p>
<p>.2.2.2.20<sup>92</sup></p>	<p>.2.2.20.20<sup>31</sup></p>		
<p>5,3,2<sup>61</sup></p>	<p>5,21,2<sup>11</sup></p>	<p>41,3,2<sup>31</sup></p>	<p>41,21,2<sup>41</sup></p>
<p>32,3,2<sup>62</sup></p>	<p>32,21,2<sup>112</sup></p>	<p>311,3,2<sup>132</sup></p>	<p>311,21,2<sup>42</sup></p>
<p>23,3,2<sup>132</sup></p>	<p>23,21,2<sup>42</sup></p>	<p>221,3,2<sup>62</sup></p>	<p>221,21,2<sup>132</sup></p>
<p>22,22,2<sup>222</sup></p>	<p>22,211,2<sup>222</sup></p>	<p>211,211,2<sup>222</sup></p>	<p>4,3,3<sup>62</sup></p>
<p>4,3,21<sup>32</sup></p>	<p>4,21,21<sup>21</sup></p>	<p>31,3,3<sup>62</sup></p>	<p>31,3,21<sup>32</sup></p>
<p>31,21,21<sup>22</sup></p>	<p>22,3,3<sup>51</sup></p>	<p>22,21,21<sup>13</sup></p>	<p>211,3,21<sup>22</sup></p>

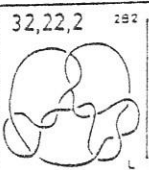
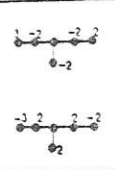
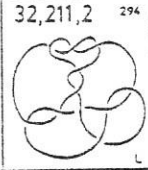
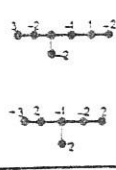
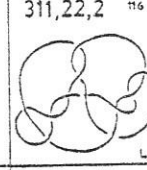
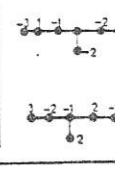
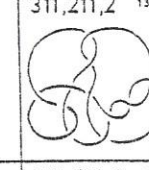
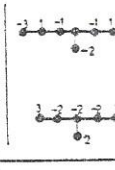
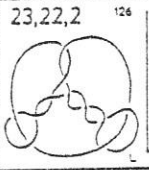
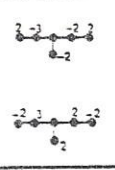
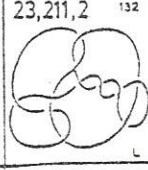
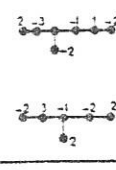
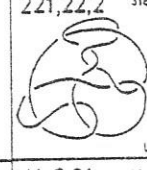
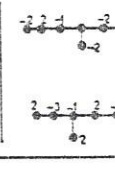
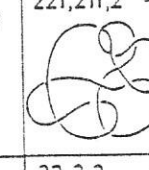
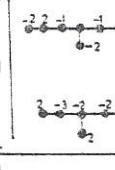

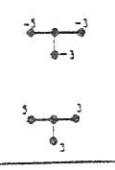
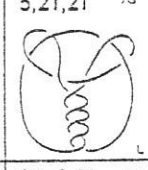
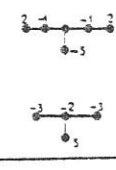
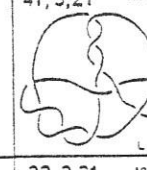
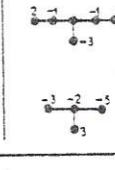
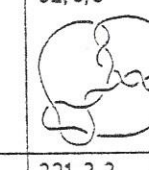
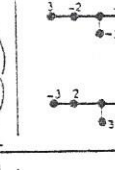
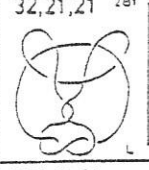
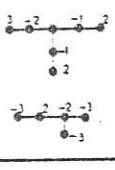
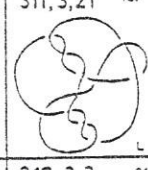
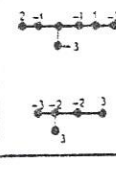
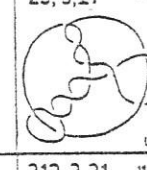
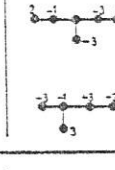
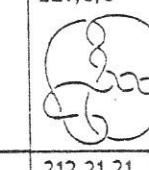
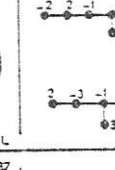
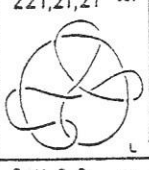
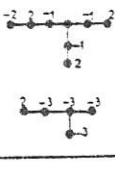
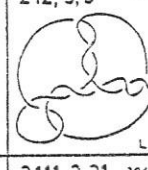
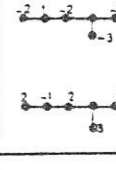
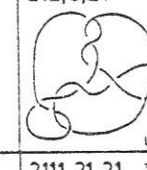
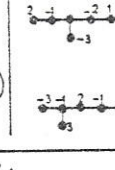
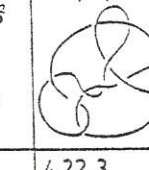
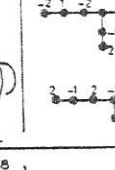

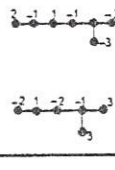
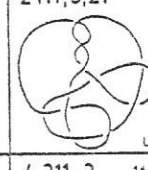
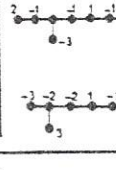
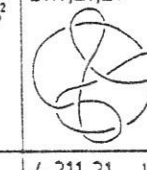
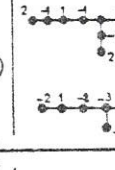
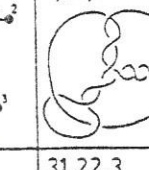
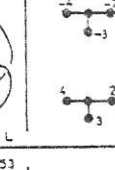
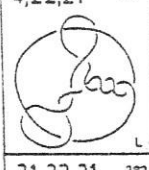
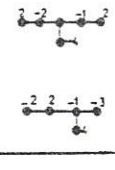
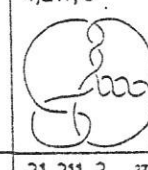
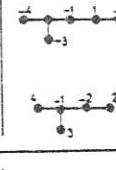
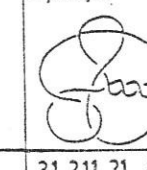
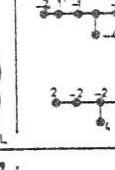
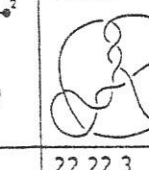
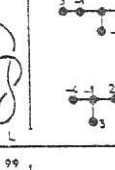
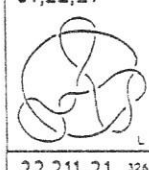
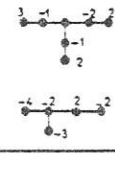

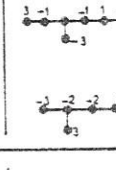
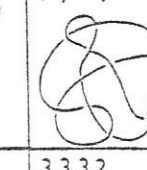
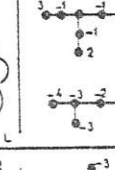
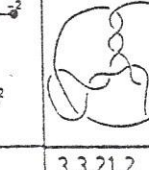
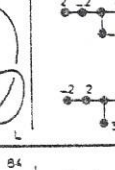
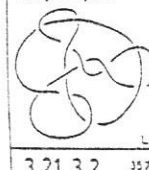
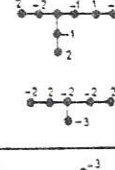
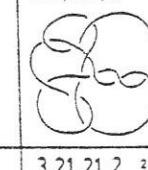
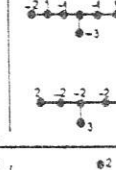
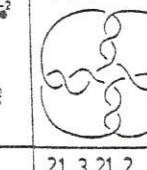
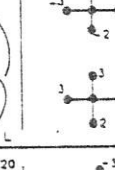
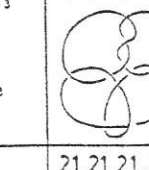
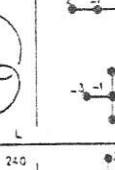

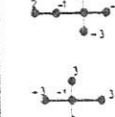

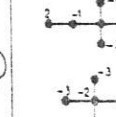

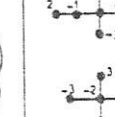

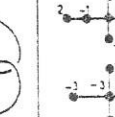


NOEUDS

ARBORESCENTS

$(3,2)(3,2^-)$ <sup>322</sup> 	$(3,2)(21,2^-)$ <sup>422</sup> 	$(21,2)(3,2^-)$ <sup>422</sup> 	$(21,2)(21,2^-)$ <sup>322</sup> 
$(3,2)-(3,2)$ <sup>422</sup> 	$(3,2)-(21,2)$ <sup>122</sup> 	$(21,2)-(21,2)$ <sup>422</sup> 	
$42,3,2$ <sup>231</sup> 	$42,21,2$ <sup>247</sup> 	$411,3,2$ <sup>15</sup> 	$411,21,2$ <sup>101</sup> 
$312,3,2$ <sup>36</sup> 	$312,21,2$ <sup>115</sup> 	$3111,3,2$ <sup>276</sup> 	$3111,21,2$ <sup>308</sup> 
$24,3,2$ <sup>28</sup> 	$24,21,2$ <sup>109</sup> 	$231,3,2$ <sup>268</sup> 	$231,21,2$ <sup>307</sup> 
$213,3,2$ <sup>31</sup> 	$213,21,2$ <sup>131</sup> 	$2121,3,2$ <sup>290</sup> 	$2121,21,2$ <sup>329</sup> 
$2112,3,2$ <sup>113</sup> 	$2112,21,2$ <sup>330</sup> 	$21111,3,2$ <sup>130</sup> 	$21111,21,2$ <sup>345</sup> 
$5,22,2$ <sup>17</sup> 	$5,211,2$ <sup>14</sup> 	$41,22,2$ <sup>246</sup> 	$41,211,2$ <sup>259</sup> 

# NŒUDS ARBORESCENTS

<p>32,22,2 <sup>292</sup></p>  	<p>32,211,2 <sup>294</sup></p>  	<p>311,22,2 <sup>116</sup></p>  	<p>311,211,2 <sup>133</sup></p>  
<p>23,22,2 <sup>124</sup></p>  	<p>23,211,2 <sup>132</sup></p>  	<p>221,22,2 <sup>318</sup></p>  	<p>221,211,2 <sup>328</sup></p>  
<p>5,3,3 <sup>2</sup></p>  	<p>5,21,21 <sup>78</sup></p>  	<p>41,3,21 <sup>230</sup></p>  	<p>32,3,3 <sup>85</sup></p>  
<p>32,21,21 <sup>281</sup></p>  	<p>311,3,21 <sup>107</sup></p>  	<p>23,3,21 <sup>100</sup></p>  	<p>221,3,3 <sup>93</sup></p>  
<p>221,21,21 <sup>201</sup></p>  	<p>212,3,3 <sup>26</sup></p>  	<p>212,3,21 <sup>114</sup></p>  	<p>212,21,21 <sup>287</sup></p>  
<p>2111,3,3 <sup>82</sup></p>  	<p>2111,3,21 <sup>304</sup></p>  	<p>2111,21,21 <sup>302</sup></p>  	<p>4,22,3 <sup>18</sup></p>  
<p>4,22,21 <sup>89</sup></p>  	<p>4,211,3 <sup>16</sup></p>  	<p>4,211,21 <sup>102</sup></p>  	<p>31,22,3 <sup>253</sup></p>  
<p>31,22,21 <sup>292</sup></p>  	<p>31,211,3 <sup>277</sup></p>  	<p>31,211,21 <sup>309</sup></p>  	<p>22,22,3 <sup>99</sup></p>  
<p>22,211,21 <sup>324</sup></p>  	<p>211,211,3 <sup>111</sup></p>  	<p>3,3,3,2 <sup>12</sup></p>  	<p>3,3,21,2 <sup>84</sup></p>  
<p>3,21,3,2 <sup>357</sup></p>  	<p>3,21,21,2 <sup>225</sup></p>  	<p>21,3,21,2 <sup>220</sup></p>  	<p>21,21,21,2 <sup>240</sup></p>  

NŒUDS

ARBORESCENTS

<p>5,3,2<sup>+</sup> 30</p>	<p>5,21,2<sup>+</sup> 93</p>	<p>41,3,2<sup>+</sup> 249</p>	<p>41,21,2<sup>+</sup> 122</p>
<p>32,3,2<sup>+</sup> 300</p>	<p>32,21,2<sup>+</sup> 121</p>	<p>311,3,2<sup>+</sup> 124</p>	<p>311,21,2<sup>+</sup> 334</p>
<p>23,3,2<sup>+</sup> 120</p>	<p>23,21,2<sup>+</sup> 333</p>	<p>221,3,2<sup>+</sup> 319</p>	<p>221,21,2<sup>+</sup> 350</p>
<p>22,22,2<sup>+</sup> 317</p>	<p>22,211,2<sup>+</sup> 348</p>	<p>211,211,2<sup>+</sup> 342</p>	<p>4,3,3<sup>+</sup> 19</p>
<p>4,3,21<sup>+</sup> 91</p>	<p>4,21,21<sup>+</sup> 270</p>	<p>31,3,3<sup>+</sup> 235</p>	<p>31,3,21<sup>+</sup> 299</p>
<p>31,21,21<sup>+</sup> 129</p>	<p>22,3,3<sup>+</sup> 108</p>	<p>22,21,21<sup>+</sup> 325</p>	<p>211,3,21<sup>+</sup> 337</p>
<p>22,3,2<sup>++</sup> 340</p>	<p>22,21,2<sup>++</sup> 353</p>	<p>211,3,2<sup>++</sup> 339</p>	<p>211,21,2<sup>++</sup> 356</p>
<p>3,3,3<sup>++</sup> 77</p>	<p>3,21,21<sup>++</sup> 312</p>	<p>3,3,2<sup>+++</sup> 402</p>	<p>3,21,2<sup>+++</sup> 322</p>
<p>21,21,2<sup>+++</sup> 140</p>	<p>(22,2)(3,2) 245</p>	<p>(22,2)(21,2) 269</p>	<p>(211,2)(3,2) 260</p>
<p>(211,2)(21,2) 304</p>	<p>(3,21)(3,2) 234</p>	<p>(3,21)(21,2) 264</p>	<p>(3,2+)(3,2) 254</p>

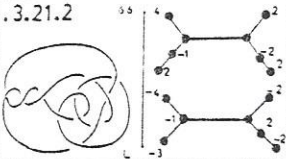
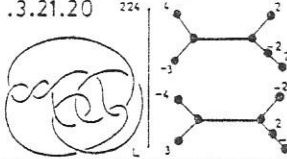
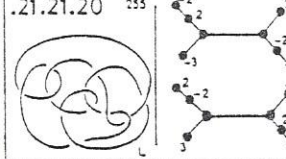
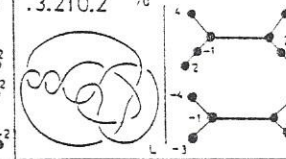
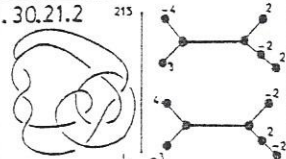
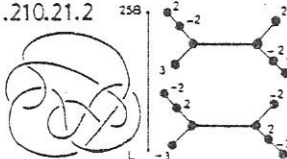
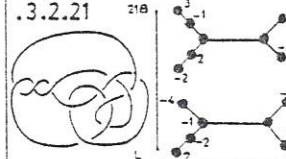
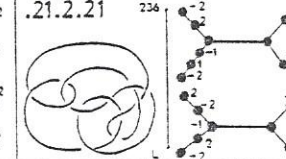
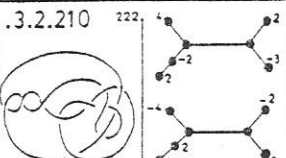
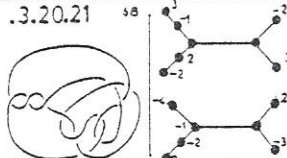
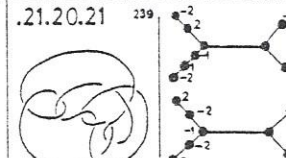
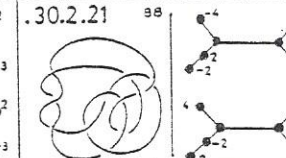
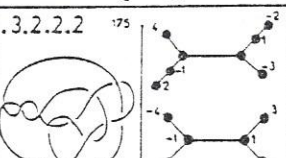
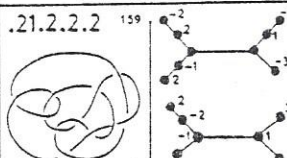
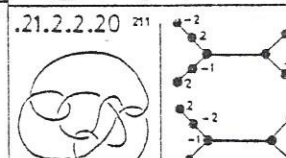
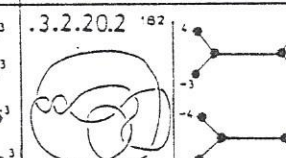
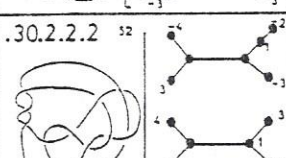
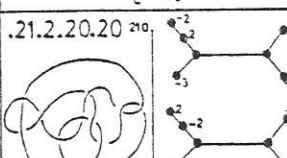
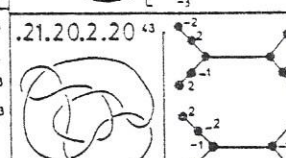
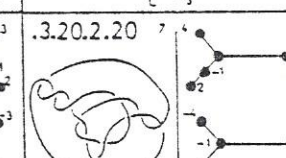
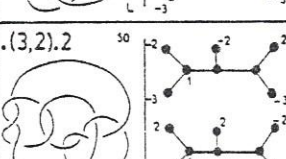
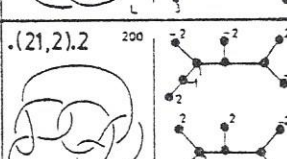
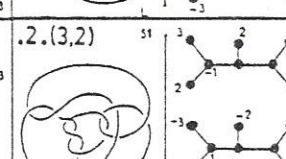
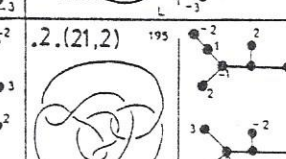
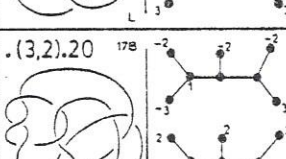
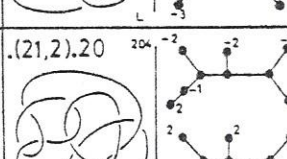
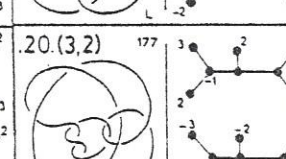
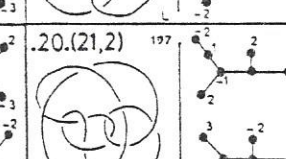
# NOEUDS

# ARBORESCENTS

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(3,2)1(21,2) <sup>96</sup> 	(21,2)1(21,2) <sup>238</sup> 		
.41.2 <sup>75</sup> 	.41.20 <sup>229</sup> 	.311.2 <sup>264</sup> 	.311.20 <sup>98</sup> 
.23.2 <sup>263</sup> 	.23.20 <sup>77</sup> 	.212.2 <sup>288</sup> 	.212.20 <sup>110</sup> 
.2111.2 <sup>103</sup> 	.2111.20 <sup>305</sup> 	.4.210 <sup>74</sup> 	.4.21 <sup>74</sup> 
.31.210 <sup>267</sup> 	.31.21 <sup>245</sup> 	.22.210 <sup>286</sup> 	.22.21 <sup>285</sup> 
.4.2.2 <sup>58</sup> 	.31.2.2 <sup>219</sup> 	.211.2.2 <sup>256</sup> 	.22.2.20 <sup>244</sup> 
.211.2.20 <sup>261</sup> 	.4.20.2 <sup>11</sup> 	.31.20.2 <sup>228</sup> 	.211.20.2 <sup>95</sup> 
.220.2.2 <sup>243</sup> 	.2110.2.2 <sup>260</sup> 	.2.4.2 <sup>186</sup> 	.2.31.2 <sup>54</sup> 
.2.22.2 <sup>213</sup> 	.2.40.2 <sup>10</sup> 	.2.310.2 <sup>184</sup> 	.2.220.2 <sup>72</sup> 

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<p>.3.21.2 <sup>99</sup></p> 	<p>.3.21.20 <sup>224</sup></p> 	<p>.21.21.20 <sup>255</sup></p> 	<p>.3.210.2 <sup>70</sup></p> 
<p>.30.21.2 <sup>215</sup></p> 	<p>.210.21.2 <sup>258</sup></p> 	<p>.3.2.21 <sup>218</sup></p> 	<p>.21.2.21 <sup>236</sup></p> 
<p>.3.2.210 <sup>222</sup></p> 	<p>.3.20.21 <sup>58</sup></p> 	<p>.21.20.21 <sup>239</sup></p> 	<p>.30.2.21 <sup>98</sup></p> 
<p>.3.2.2.2 <sup>175</sup></p> 	<p>.21.2.2.2 <sup>159</sup></p> 	<p>.21.2.2.20 <sup>211</sup></p> 	<p>.3.2.20.2 <sup>182</sup></p> 
<p>.30.2.2.2 <sup>52</sup></p> 	<p>.21.2.20.20 <sup>210</sup></p> 	<p>.21.20.2.20 <sup>43</sup></p> 	<p>.3.20.2.20 <sup>7</sup></p> 
<p>.(3,2).2 <sup>50</sup></p> 	<p>.(21,2).2 <sup>200</sup></p> 	<p>.2.(3,2) <sup>51</sup></p> 	<p>.2.(21,2) <sup>195</sup></p> 
<p>.(3,2).20 <sup>178</sup></p> 	<p>.(21,2).20 <sup>204</sup></p> 	<p>.20.(3,2) <sup>177</sup></p> 	<p>.20.(21,2) <sup>197</sup></p> 

# NŒUDS ARBORESCENTS

42, 3, 2- <sup>368</sup>  	42, 21, 2- <sup>369</sup>  	411, 3, 2- <sup>370</sup>  	411, 21, 2- <sup>371</sup>  
312, 3, 2- <sup>372</sup>  	312, 21, 2- <sup>373</sup>  	3111, 3, 2- <sup>374</sup>  	3111, 21, 2- <sup>375</sup>  
24, 3, 2- <sup>376</sup>  	24, 21, 2- <sup>377</sup>  	231, 3, 2- <sup>378</sup>  	231, 21, 2- <sup>379</sup>  
213, 3, 2- <sup>380</sup>  	213, 21, 2- <sup>381</sup>  	2121, 3, 2- <sup>382</sup>  	2121, 21, 2- <sup>383</sup>  
2112, 3, 2- <sup>384</sup>  	2112, 21, 2- <sup>385</sup>  	21111, 3, 2- <sup>386</sup>  	21111, 21, 2- <sup>387</sup>  
5, 22, 2- <sup>388</sup>  	5, 211, 2- <sup>389</sup>  	41, 22, 2- <sup>390</sup>  	41, 211, 2- <sup>391</sup>  
32, 22, 2- <sup>392</sup>  	32, 211, 2- <sup>393</sup>  	311, 22, 2- <sup>394</sup>  	311, 211, 2- <sup>395</sup>  
23, 22, 2- <sup>396</sup>  	23, 211, 2- <sup>397</sup>  	221, 22, 2- <sup>398</sup>  	221, 211, 2- <sup>399</sup>  
5, 3, 21- <sup>400</sup>  	41, 3, 3- <sup>401</sup>  	41, 21, 21- <sup>402</sup>  	32, 3, 21- <sup>403</sup>  
311, 3, 3- <sup>404</sup>  	311, 21, 21- <sup>405</sup>  	23, 3, 3- <sup>406</sup>  	23, 21, 21- <sup>407</sup>  

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$21,221,3-$ <sup>408</sup> 	$212,3,3-$ <sup>409</sup> 	$212,3,21-$ <sup>410</sup> 	$212,21,21-$ <sup>411</sup> 
$2111,3,3-$ <sup>412</sup> 	$2111,3,21-$ <sup>413</sup> 	$2111,21,21-$ <sup>414</sup> 	$4,22,3-$ <sup>415</sup> 
$4,211,3-$ <sup>417</sup> 	$4,22,21-$ <sup>416</sup> 	$4,211,21-$ <sup>418</sup> 	$31,22,3-$ <sup>419</sup> 
$31,211,3-$ <sup>421</sup> 	$31,22,21-$ <sup>420</sup> 	$31,211,21-$ <sup>422</sup> 	$22,22,21-$ <sup>423</sup> 
$22,211,3-$ <sup>424</sup> 	$211,211,21-$ <sup>425</sup> 	$3,3,3,2-$ <sup>426</sup> 	$3,3,21,2-$ <sup>427</sup> 
$3,21,3,2-$ <sup>428</sup> 	$3,21,21,2-$ <sup>429</sup> 	$21,3,21,2-$ <sup>430</sup> 	$21,21,21,2-$ <sup>431</sup> 
$3,3,3,2--$ <sup>432</sup> 	$3,3,21,2--$ <sup>433</sup> 	$3,21,3,2--$ <sup>434</sup> 	$(22,2)(3,2)-$ <sup>435</sup> 
$(22,2)(21,2)-$ <sup>436</sup> 	$(211,2)(3,2)-$ <sup>437</sup> 	$(211,2)(21,2)-$ <sup>438</sup> 	$(3,21)(3,2)-$ <sup>439</sup> 
$(3,21)(21,2)-$ <sup>440</sup> 	$(3,2+)(3,2-)$ <sup>441</sup> 	$(3,2+)(21,2)-$ <sup>442</sup> 	$(21,2+)(3,2-)$ <sup>443</sup> 
$(21,2+)(21,2)-$ <sup>444</sup> 	$(22,2-)(3,2-)$ <sup>445</sup> 	$(22,2-)(21,2-)$ <sup>446</sup> 	$(211,2-)(3,2)$ <sup>447</sup> 

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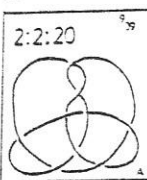
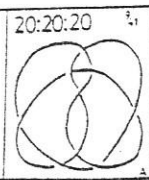
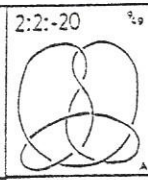
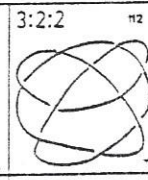
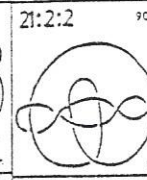
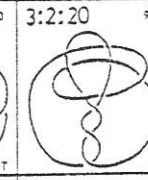
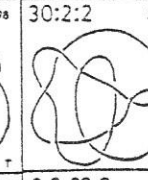
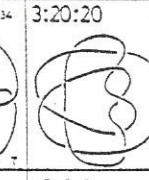

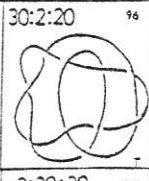
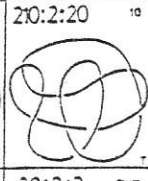
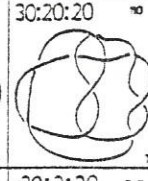
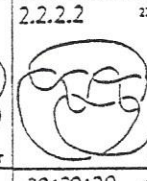
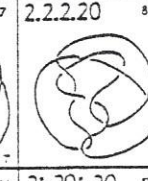
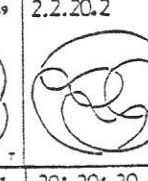
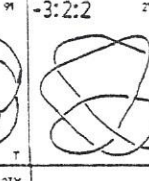
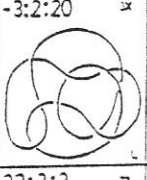
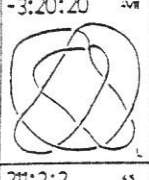
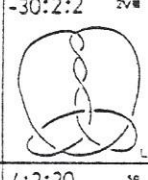
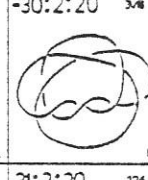
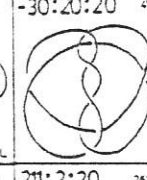
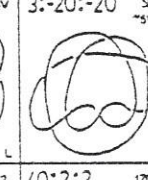
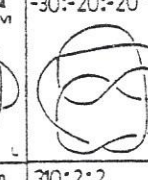
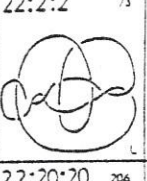
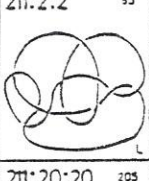
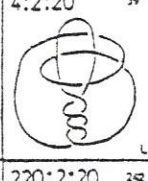
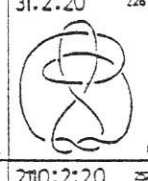
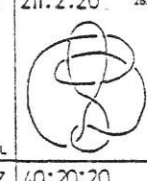
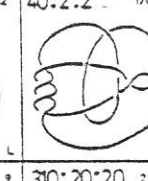
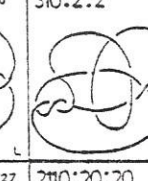
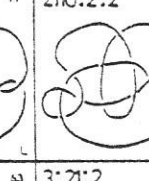
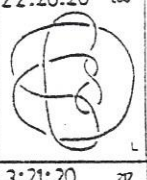
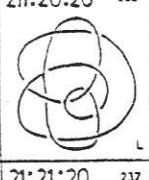
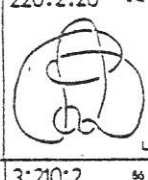
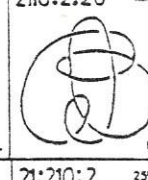
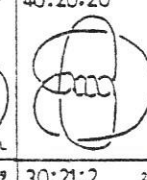
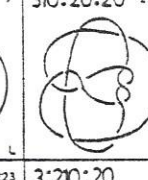
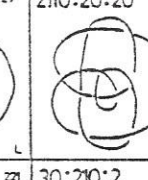
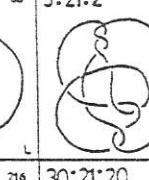
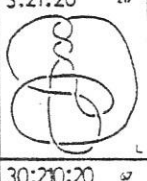
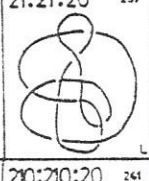
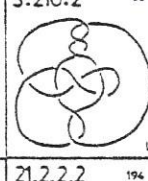
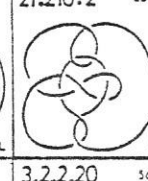
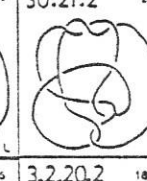
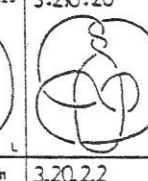
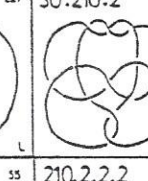
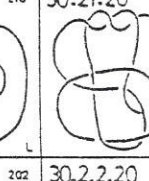
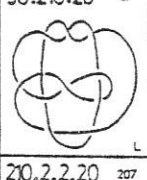
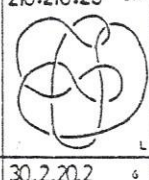
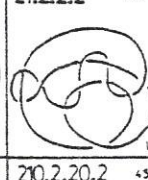
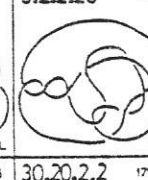
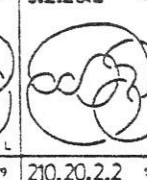
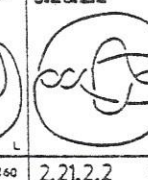
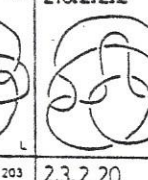



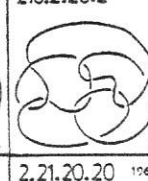
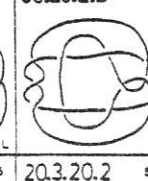
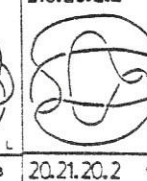
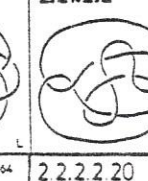
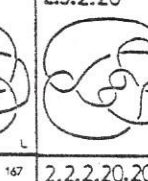
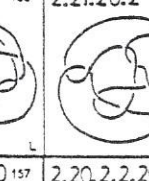

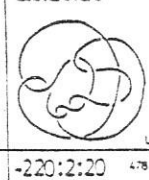
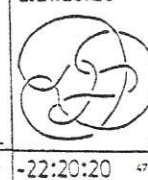
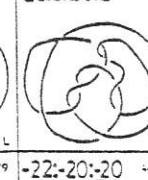
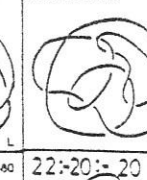
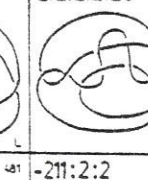
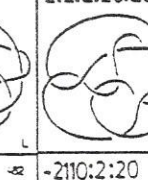
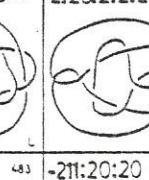





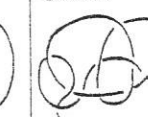

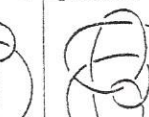
# ARBORESCENTS

$(211, 2^-)(21, 2)^{+48}$ 	$(3, 3^-)(3, 2)^{+49}$ 	$(3, 3^-)(21, 2)^{+50}$ 	$(21, 21^-)(3, 2)^{+51}$ 
$(21, 21^-)(21, 2)^{+52}$ 	$(22, 2)(3, 2)^{+53}$ 	$(22, 2)-(21, 2)^{+54}$ 	$(211, 2)-(3, 2)^{+55}$ 
$(211, 2)-(21, 2)^{+56}$ 	$(3, 21)-(3, 2)^{+57}$ 	$(3, 21)-(21, 2)^{+58}$ 	$(3, 2^+)(3, 2)^{+59}$ 
$(3, 2^+)(21, 2)^{+60}$ 	$(21, 2^+)-(3, 2)^{+61}$ 	$(21, 2^+)-(21, 2)^{+62}$ 	$(3, 2^-).2^{+63}$ 
$.(21, 2^-).2^{+64}$ 	$.2.(3, 2^-)^{+65}$ 	$.2.(21, 2^-)^{+66}$ 	$(3, 2^-).20^{+67}$ 
$.(21, 2^-).20^{+68}$ 	$.20.(3, 2^-)^{+69}$ 	$.20.(21, 2^-)^{+70}$ 	$.-.(3, 2).2^{+71}$ 
$.-.(21, 2).2^{+72}$ 	$.2.-.(3, 2)^{+73}$ 	$.2.-.(21, 2)^{+74}$ 	$.-.(3, 2).20^{+75}$ 
$.20.-.(3, 2)^{+76}$ 			



# NŒUDS

# HYPERBOLIQUES

2:2:20 <sup>59</sup> 	20:20:20 <sup>51</sup> 	2:2:-20 <sup>59</sup> 	3:2:2 <sup>112</sup> 	21:2:2 <sup>90</sup> 	3:2:20 <sup>98</sup> 	30:2:2 <sup>34</sup> 	3:20:20 <sup>12</sup> 
21:20:20 <sup>83</sup> 	30:2:20 <sup>96</sup> 	210:2:20 <sup>10</sup> 	30:20:20 <sup>10</sup> 	2.2.2.2 <sup>27</sup> 	2.2.2.20 <sup>89</sup> 	2.2.20.2 <sup>91</sup> 	-3:2:2 <sup>218</sup> 
-3:2:20 <sup>28</sup> 	-3:20:20 <sup>218</sup> 	-30:2:2 <sup>218</sup> 	-30:2:20 <sup>218</sup> 	-30:20:20 <sup>218</sup> 	3:-20:-20 <sup>58</sup> 	-30:-20:-20 <sup>218</sup> 	
22:2:2 <sup>73</sup> 	211:2:2 <sup>53</sup> 	4:2:20 <sup>59</sup> 	31:2:20 <sup>126</sup> 	211:2:20 <sup>262</sup> 	40:2:2 <sup>170</sup> 	310:2:2 <sup>71</sup> 	2110:2:2 <sup>209</sup> 
2.2:20:20 <sup>206</sup> 	211:20:20 <sup>205</sup> 	220:2:20 <sup>242</sup> 	2110:2:20 <sup>257</sup> 	40:20:20 <sup>9</sup> 	310:20:20 <sup>227</sup> 	2110:20:20 <sup>53</sup> 	3:21:2 <sup>69</sup> 
3:21:20 <sup>217</sup> 	21:21:20 <sup>237</sup> 	3:210:2 <sup>56</sup> 	21:210:2 <sup>259</sup> 	30:21:2 <sup>223</sup> 	3:210:20 <sup>221</sup> 	30:210:2 <sup>216</sup> 	30:21:20 <sup>87</sup> 
30:210:20 <sup>67</sup> 	210:210:20 <sup>241</sup> 	21.2.2.2 <sup>194</sup> 	3.2.2.20 <sup>56</sup> 	3.2.20.2 <sup>181</sup> 	3.20.2.2 <sup>55</sup> 	210.2.2.2 <sup>202</sup> 	30.2.2.20 <sup>180</sup> 
210.2.2.20 <sup>207</sup> 	30.2.20.2 <sup>6</sup> 	210.2.20.2 <sup>45</sup> 	30.20.2.2 <sup>179</sup> 	210.20.2.2 <sup>160</sup> 	2.21.2.2 <sup>203</sup> 	2.3.2.20 <sup>183</sup> 	2.21.20.2 <sup>208</sup> 
20.3.2.2 <sup>53</sup> 	2.3.20.20 <sup>176</sup> 	2.21.20.20 <sup>106</sup> 	20.3.20.2 <sup>8</sup> 	20.21.20.2 <sup>64</sup> 	2.2.2.2.20 <sup>167</sup> 	2.2.2.20.20 <sup>157</sup> 	2.20.2.2.20 <sup>159</sup> 
-22:2:2 <sup>277</sup> 	-220:2:20 <sup>478</sup> 	-22:20:20 <sup>479</sup> 	-22:-20:-20 <sup>480</sup> 	22:-20:-20 <sup>481</sup> 	-211:2:2 <sup>482</sup> 	-2110:2:20 <sup>483</sup> 	-211:20:20 <sup>484</sup> 

NOEUDS

HYPERBOLIQUES

-211:20:20 <sup>485</sup>	-40:2:2 <sup>486</sup>	-40:2:20 <sup>487</sup>	-40:20:20 <sup>488</sup>	-40:20:20 <sup>489</sup>	-310:2:2 <sup>490</sup>	-310:20:20 <sup>491</sup>	-2110:2:2 <sup>493</sup>
-211:2:20 <sup>494</sup>	-310:-20:20 <sup>496</sup>	-2110:20:20 <sup>495</sup>	-2110:-20:20 <sup>496</sup>	-30:21:2 <sup>497</sup>	-30:21:-20 <sup>498</sup>	-30:210:2 <sup>499</sup>	-210:30:2 <sup>500</sup>
-210:-30:20 <sup>501</sup>	-210:21:2 <sup>502</sup>	-210:-210:20 <sup>503</sup>	2.-21.2.2 <sup>504</sup>	2.21.-2.2 <sup>505</sup>	2.-3.2.20 <sup>506</sup>	2.3.-2.20 <sup>507</sup>	20.3.-2.2 <sup>508</sup>
2.-3.-20.20 <sup>509</sup>	2.-21.-20.20 <sup>510</sup>	20.-3.-20.2 <sup>511</sup>	20.-21.-20.2 <sup>512</sup>	2.2.-2.2.20 <sup>513</sup>	2.2.-2.20.20 <sup>514</sup>	2.20.-2.2.20 <sup>515</sup>	-210:3:2 <sup>512</sup>
8 <sup>+</sup> <sup>29</sup>		8 <sup>+</sup> 20 <sup>34</sup>	8 <sup>+</sup> 20 <sup>37</sup>		8 <sup>+</sup> 3 <sup>94</sup>	8 <sup>+</sup> 21 <sup>30</sup>	8 <sup>+</sup> 30 <sup>93</sup>
8 <sup>+</sup> 20.20 <sup>29</sup>	8 <sup>+</sup> 2:2 <sup>38</sup>	8 <sup>+</sup> 2:20 <sup>25</sup>	8 <sup>+</sup> 2:2 <sup>26</sup>	8 <sup>+</sup> 2:20 <sup>35</sup>	8 <sup>+</sup> 20::20 <sup>32</sup>	8 <sup>+</sup> 30 <sup>31</sup>	8 <sup>+</sup> 2:20 <sup>11</sup>
8 <sup>+</sup> 2:-20 <sup>41</sup>		8 <sup>+</sup> 22 <sup>212</sup>	8 <sup>+</sup> 211 <sup>191</sup>	8 <sup>+</sup> 40 <sup>51</sup>	8 <sup>+</sup> 310 <sup>214</sup>	8 <sup>+</sup> 2110 <sup>186</sup>	8 <sup>+</sup> 3.20 <sup>48</sup>
8 <sup>+</sup> 21.20 <sup>190</sup>	8 <sup>+</sup> 30.20 <sup>173</sup>	8 <sup>+</sup> 21:2 <sup>198</sup>	8 <sup>+</sup> 3:20 <sup>172</sup>	8 <sup>+</sup> 210:2 <sup>192</sup>	8 <sup>+</sup> 30:20 <sup>47</sup>	8 <sup>+</sup> 210:20 <sup>199</sup>	8 <sup>+</sup> 21:-2 <sup>193</sup>
8 <sup>+</sup> 3:20 <sup>174</sup>	8 <sup>+</sup> 210:-2 <sup>201</sup>	8 <sup>+</sup> 30:-20 <sup>174</sup>	8 <sup>+</sup> 210:-20 <sup>189</sup>	8 <sup>+</sup> 3:-20 <sup>171</sup>	8 <sup>+</sup> 21:-20 <sup>146</sup>	8 <sup>+</sup> 30:-20 <sup>46</sup>	8 <sup>+</sup> 2.20.2 <sup>453</sup>

# NOEUDS

# HYPERBOLIQUES

$8^x 2.20.20$ <sup>154</sup> 	$8^x 2.20:20$ <sup>166</sup> 	$8^x 2.20:20$ <sup>160</sup> 	$8^x 20.2:2$ <sup>404</sup> 	$8^x 20.2:20$ <sup>405</sup> 	$8^x 20.20:20$ <sup>156</sup> 	$8^x 20.2:-2$ <sup>164</sup> 	$8^x 20.2:-20$ <sup>411</sup> 
$8^x 20.20:2$ <sup>158</sup> 	$8^x 2:2:20$ <sup>165</sup> 	$8^x 2:20:20$ <sup>162</sup> 	$8^x 20:20:20$ <sup>92</sup> 	$8^x 2:-20:2$ <sup>42</sup> 	$8^x 2:-2:-20$ <sup>152</sup> 	$8^x 40$ <sup>516</sup> 	$8^x 310$ <sup>517</sup> 
$8^x 2110$ <sup>518</sup> 	$8^x 30.20$ <sup>519</sup> 	$8^x 3:-20$ <sup>520</sup> 	$8^x 210:2$ <sup>521</sup> 	$8^x 30:20$ <sup>522</sup> 	$8^x 30:-20$ <sup>523</sup> 	$8^x 210:20$ <sup>524</sup> 	$8^x 210:-20$ <sup>530</sup> 
$8^x 30:-20$ <sup>526</sup> 	$8^x 210:-20$ <sup>525</sup> 	$8^x 30:-20$ <sup>527</sup> 	$8^x 3:-20$ <sup>528</sup> 	$8^x 21:-20$ <sup>529</sup> 	$8^x 2.-20.2$ <sup>530</sup> 	$8^x 2.-20.20$ <sup>531</sup> 	$8^x 2.-20.-20$ <sup>532</sup> 
$8^x 2:2:20$ <sup>533</sup> 	$8^x 2:20:20$ <sup>534</sup> 	$8^x 2:-20:20$ <sup>535</sup> 	$8^x 20:20:20$ <sup>536</sup> 	$8^x 20:20:20$ <sup>537</sup> 	$8^x 2:-20:2$ <sup>538</sup> 	$8^x 2:-2:-20$ <sup>539</sup> 	$8^x 210:2$ <sup>549</sup> 
$8^x 30:-20$ <sup>531</sup> 							
$9^x$ <sup>20</sup> 		$9^x 20$ <sup>28</sup> 	$9^x 20$ <sup>87</sup> 	$9^x 3$ <sup>57</sup> 	$9^x 21$ <sup>406</sup> 	$9^x 30$ <sup>185</sup> 	$9^x 3$ <sup>407</sup> 
$9^x 21$ <sup>408</sup> 	$9^x 30$ <sup>409</sup> 	$9^x 2.2$ <sup>155</sup> 	$9^x 2.20$ <sup>44</sup> 	$9^x 20.2$ <sup>149</sup> 	$9^x 2:2$ <sup>39</sup> 	$9^x 2:20$ <sup>161</sup> 	$9^x 20:20$ <sup>158</sup> 
$9^x 2:-2$ <sup>145</sup> 	$9^x 2:-20$ <sup>153</sup> 	$9^x 20.20$ <sup>147</sup> 	$9^x 20:-20$ <sup>163</sup> 	$9^x 3$ <sup>540</sup> 	$9^x 21$ <sup>541</sup> 	$9^x 2:-2$ <sup>542</sup> 	$9^x 20:2$ <sup>543</sup> 
$9^x 2:-2$ <sup>544</sup> 	$9^x 2:-2:-2$ <sup>545</sup> 	$9^x 20:-2$ <sup>546</sup> 					

# NŒUDS

# HYPERBOLIQUES

$10^*$ 38 	$10^*20$ 148 	$10^{**}2$ 150 	$10^{**}20$ 410 	$10^{**}2$ 151 	$10^{**}20$ 144 	$10^*20$ 547 	$10^{**}20$ 548 
$11^*$ 411 							

# ENLACEMENTS

# HYPERBOLIQUES

2:2:2 	2:20:20 	2:-20:-20 		21:2:20 	210:2:2 	210:20:20 	2.2.20.20 
2.20.2.20 	20.2.2.20 	-210:2:2 	-210:20:20 	-210:-20:-20 	2.-2.-20.20 	2.-20.-2.20 	
$8^*2$ 		$8^*210$ 	$8^*2.20$ 	$8^*20:20$ 	$8^*20:-20$ 	$8^*2::20$ 	$8^*2.-20$ 
	$8^*20:20$ 	$8^*20:-20$ 					
$9^*2$ 	$9^*.2$ 	$9^*.2$ 		$10^{**}$ 			
20.2.20.20 	20.-2.-20.20 		$8^*2.2$ 	$8^*2::2$ 			

M. CAUDRON Alain

le 6/9/78

Villa n°10

Rue N° 153

LAMARSA Belleville

TUNISIE

[Du 10/5/78 → 30/6/79]

Dear Perko

THANK YOU FOR YOUR LETTER, OF SEPT. 1

I DON'T WORK WITH PUREST TURKS HEAD

BUT, I HAVE CORRECTED THE LISTING, OF  
CONWAY, in an OTHER WAY

I HOPE. P 357 4eme COL.

WE MUST HAVE

$8^x - 30 : 20$

$8^x - 30 : -20$

$8^x - 210 : 20$

$8^x - 210 : -20$  x (ERROR) Typo.

$8^x - 30 : 20$

So I THINK THAT  $8^x - 210 : 20$  IS AN OMISSION

BUT WHERE IS?  $8^x - 30 : -20$  (a priori)

WHAT DO YOU THINK ABOUT THIS

TWO ELEVEN CROSSING KNOTS.

ONE CHASE MANHATTAN PLAZA  
NEW YORK 10005

SEPT. 28, 1978

DEAR CAUDRON,

I'M AFRAID I WAS A BIT HASTY  
IN WRITING TO YOU YESTERDAY. I  
HAD NOT ACTUALLY CHECKED THAT  
 $8^*-30::20 \sim 11541$ , BUT MERELY THAT  
THEY LOOKED SIMILAR AND THAT 11541  
WAS THE ONLY KNOT IN THE TABLE  
WITH  $H_1 M_2 = \mathbb{Z}_5 \oplus \mathbb{Z}_{15}$ . UPON CLOSER  
EXAMINATION I FIND THEY ARE  
DISTINGUISHABLE BY LINKAGE IN THE  
3-FOLD DIHEDRAL COVER ( $V_3 = 18/7$   
VS.  $2/7$ ) AND INDEED THAT THE  
ALEXANDER POLYNOMIAL OF  $8^*-30::20$   
( $[25 -18 6 -1$  IN CONWAY'S SHORTHAND)  
IS DIFFERENT FROM THAT OF ANY  
OTHER KNOWN PRIME KNOT TYPE.  
(ALSO,  $8^*-30::20$  IS PRIME BECAUSE  
 $H_1 M_3 \neq \mathbb{Z}_5$ .) SO I THINK YOU HAVE  
INDEED IDENTIFIED ANOTHER  
OMISSION FROM CONWAY'S TABLE!

HAVE YOU ANY FURTHER SUGGESTED  
OMISSIONS?

SINCERELY,

Kim Ruler