New Prediction of Sars-Covid-19 in Italy

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Abstract : We estimate the contagions of Sars-Covid-19 in Italy until June 2020 and we compare the results with our previous estimations. We obtain that the fractal model we use, estimates the behavior of the experimental data and prediction with an r^2 value of 0.95. We have that the time of peak is 37.80 days for the prediction 1 and 37.33 days for prediction 2 starting with February 20. The number of contagions will drop below 10 in June 28 for prediction 1 and July 14 for prediction 2 as explained in Figure 1.

Introduction

The pandemic infection from Sars-Covid-19 is scourging Italy starting with February 20 and the virus threatens not to lower strongly its virulence level. The course of contagions follows a fractal regime that we have studied previously [1, 2] and we

continue with our predictions. The aim of the present work is to estimate the behavior of contagions until June 2020.

Materials and Methods

The power-law (fractal) behavior has been postulated and applied in epidemic studies of Corona virus disease in China [3, 4]. It is related to the properties of the networks that carry out the propagation of the disease. Vazquez [3, 4] developed a network model in which the daily number of new cases n(t) in an epidemic follows a power-law with an exponential cutoff

$n(t)=kt^{\gamma}exp(-t/t_0)$

In China it has been applied by Anna L. Ziff and Robert M. Ziff in March 2, 2020.

We apply the same model for the contagions of Corona Virus in Italy. The parameters that we estimate are the follows:

prediction 1

k = 0.005

γ = 5.268

t_0= 7.176

prediction 2

k = 0.115

γ = 4.146

t_0= 9.004

Results

The estimations confirm that we are in presence of a fractal regime given by the non-integer value of γ. The values found in China are instead K = 0.0854, x = 2.28-3.09, and t_0 = 8.90 days (the time constant of decay). The value γ t_0 represents the Time of the Peak. The results are in Figure 1. The time explored goes from February 20 to June 28. We have that the time of peak is 37.80 days for the prediction 1 and

37.33 days for prediction 2 starting with February 20. The number of contagions will drop below 10 in June 28 for prediction 1 and July 14 for prediction 2 as explained in Figure 1.

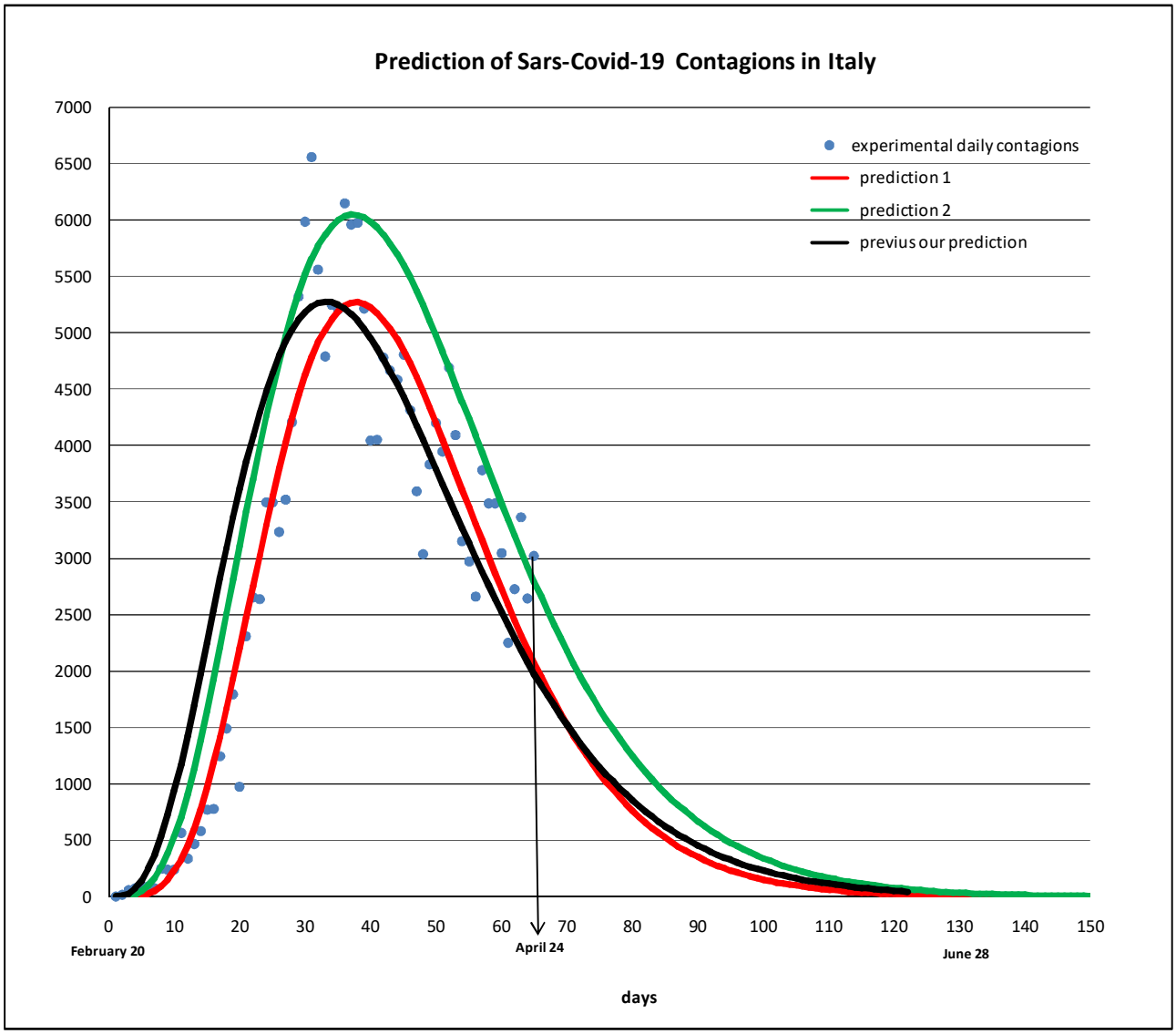

Figure 1.

References

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