Supplementary information

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Height-dependent differential rotation of the solar atmosphere detected by CHASE

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Supplementary Figure ⊥x, LOS Ο

Fig. 1 A top-view sketch showing how the fake Doppler signal is introduced by the relative speed of the satellite to the Sun. "O" marks the position of the satellite, "C" is the centroid of the Sun. "A" and "B" mark the two positions on the eastern and western hemispheres, respectively. The quantity v_{\parallel} is the line-of-sight component of relative speed of the satellite to the Sun. For the perpendicular component, only $v_{\perp x}$ is shown since the y-direction is perpendicular to the plane. The Sun moves rightward relative to the satellite with a speed of $v_{\perp x}$, which is projected to the line of sight as $v_{\perp x,LOS}$. It shows a blueshift at point "A" and a redshift at "B".