

Preferred solar flare longitudes: inferred from differential rotation law

L.Y. Zhang , Y.M. Cui , H.N. Wang

National Astronomical Observatories, Chinese Academy of Sciences, Beijing, China
(zhangliyun@bao.ac.cn / +86+10+64888756)

In order to analyze the longitudinal distribution of solar X-ray flares, we import a dynamic reference frame inferred from the differential rotation law. The dynamic frame is described quantitatively by the equatorial rotation rate and the differential rotation rate. The differential rotation rates are calculated according to the latitudes of solar flares. We find that solar flares distribute preferably near some active longitudes. And that the equatorial rotation rate and the differential rotation rate are different from those for sunspots, which implies that the depth of flare breaking is different from the depth of sunspot occurrence. The bigger equatorial rotation rate and the smaller differential one show that the depth of solar flare rotates much closer to rigid body than the depth of sunspot occurrence.