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Sun motion about the barycentre and 22-year cycle of solar activity

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Abstract

We investigated the role of external factors as possible cause of solar cycle. We suppose, that the orbital acceleration and it variation may change the angular moment of Sun's rotation. It is known, that L(t)-orbital moment of the Sun changes during the motion of the Sun about the barycentre of solar system [1]. We determine orbital acceleration as a(t)=L'(t)/Rc, where Rc- distance of the Sun from barycentre, L'(t)-the rate of temporal change of orbital moment of the Sun. As result of calculation of a(t) (from data [1]) we obtained the function with period equal to 22-year and interchange of sign (+/-) Each maximum of 11-year solar cycle coincided with the maximum of a(t). Maxima of even cycles (from 10 to 20) correspond to the negative values of a(t), and odd cycles (11-21)- to the positive ones. Minima of the 11-year cycle coincided with a(t)=0. We conclude, that the motion of the Sun about barycentre is very important to the solar activity and determine the solar cycle.

References

[1] Jose, R.D.(1965) *Astron.J.* 70. P.193

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