

عنوان مقاله:

Best Scenario) Physics of the solar cycle)

محل انتشار:

دومین همایش نجوم و اختر فیزیک (سال: 1388)

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خلاصه مقاله:

Most plausible and best scenario for the genesis of the solar cycle and activity phenomenon is as follows : The sun is pervaded by the large-scale poloidal and the toroidal magnetic field structure (both of which may be of primordial origin). Any perturbations near the center travel along and perpendicular to poloidal field structure and in turn perturb the toroidal field structure. Perturbations first reach the pole and then the equator and hence there is phase lag of $\pi/2$ radians. Perturbations of the poloidal field in the convective envelope perturbs the embedded toroidal field structure and, perturbed toroidal field structure attains a critical strength leading to formation of the sunspots and due to buoyancy travel along the rotational isocontours and reach the surface. Oscillations of the poloidal field with a fundamental period of 22 yrs couple with toroidal field oscillations such that the toroidal field oscillates in consonance with the poloidal field reproducing the observed cyclic periodicities 11 and an ~ 100 yrs envelope of ~ 10 solar cycles). Hence, long term solar cycle and activity phenomena with Maunder minimum like episodes are not the random or chaotic behavior of the solar cycle, it must be due to coupled oscillations of the poloidal and toroidal magnetic field structures in the solar interior

کلمات کلیدی:

لینک ثابت مقاله در پایگاه سیویلیکا:

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