

DYNAMO WAVES IN INTERFACE SOLAR DYNAMOS

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Recent studies suggest that the solar tachocline, a highly differentially rotating transition zone between the convection envelope and radiative core of the Sun, is the key region for generating large-scale solar magnetic activities. Moreover, the solar dynamo is believed to be of alpha-omega type in which a strong toroidal field is primarily produced by the differential rotation within the tachocline while the small-scale turbulence generates a weak poloidal field. We have employed a three-dimensional, finite-element spherical model to investigate the solar interface dynamo without the assumption of the axial symmetry in spherical model. It is shown that non-axisymmetric dynamo waves similar to that observed in the Sun can be produced by the fully three-dimensional, nonlinear, time-dependent interface solar dynamo.