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Magnetic Field Reversal of the Earth: a two-disk Rikitake Dynamo Model

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The Sun and the Earth possess dipolar magnetic fields that exhibit polarity reversals. Recent works, based on numerical simulations and laboratory experiments, found similar dynamical behaviours. We present results of a statistical analysis of a numerical simulation based on a generalized two-disk dynamo model. From a first investigation, we found that the dynamics of the system is controlled by the variations of the ratio of the torques and we observed different dynamical regimes characterized either by bursts or reversals, which can be periodic or random, of the magnetic field.