

Interactive comment on “Reversal in the nonlocal large-scale $\alpha\Omega$ -dynamo” by L. K. Feschenko and G. M. Vodinchar

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Dear Referee, We appreciate your interest to our article and your remarks. We replay on them step by step.

1. REFEREE. It is clear that if the dynamic equilibrium system get unbalance due to intense random shocks, it either after a brief excursion come back to its original state, or goes into a new equilibrium state.

AUTHORS. Yes, you can transfer the system from one state to another, but with disturbances of the system parameters can be obtained certain statistical properties of the series of inversions.

2. REFEREE. Another question is how well such a simple model describes the real in-
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version of the geomagnetic field. This model can be applied to any dynamic equilibrium systems.

AUTHORS. We were interested in was the question of whether it is possible to obtain due to fluctuations α -effect get tossed to the statistical properties of real paleomagnetic scale in a SIMPLEST model that retains only the main qualitative features of dynamo equations: quadratic nonlinearity, the generation of the toroidal field and the Ω -stage of the poloidal field α -stage (for $\alpha\Omega$ -dynamo) is quadratic in the magnetic field of the mechanism of suppression. The results of our calculations indicate that inversion with similar properties can be obtained even in this simple case.

3. REFEREE. It seems to me, that the similar works were carried out already by other authors for more complex geodynamo models. It would be interesting if the authors compared their results with those obtained in previous works by follow authors: M.Yu. Reshetnyak, Frank Strfani, A. Giesecke, G. Rudiger

Please also note the supplement to this comment: <http://www.nonlin-processes-geophys-discuss.net/1/C931/2015/npgd-1-C931-2015-supplement.pdf>

AUTHORS. In the above work the model α^2 -dinamo, taking into account the spatial structure of the fields and the α -effect of fluctuations of the authors receive occasional inversion, however, the waiting time has an exponential distribution of inversions, ie actually inversion form a Poisson process. With this you can not get the distribution of self-similarity, and almost unbelievably long superchrons that in real paleomagnetic scale reaches values of the order of 10^8 years. It is generally known that the time distribution of inversions is subject to a power law, and not exponentially.

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