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	authors	• V. Zheligovsky	**authors**	• V. Zheligovsky	NOT DUPLICATES	1305
	title	Weakly nonlinear stability of convective magnetohydrodynamic systems without alpha-effect to perturbations involving large scales	**title**	Weakly nonlinear stability of magnetohydrodynamic systems with a center of symmetry to perturbations, involving large scales		
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	journal	Physics of the Earth, 2006 (12), 92-108 (Engl. transl. Izvestiya, Physics of the Solid Earth, 42 (12), 2006, 1051-1068)	**journal**	Physics of the Earth (3), 2006, 69-78 (English translation: Izvestiya, Physics of the Solid Earth 42 (3), 2006, 244-253)		
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	id	id-7291875335334178215	**id**	id-4033875884652117834		
	abstract	I consider the problem of weakly nonlinear stability of three-dimensional convective magnetohydrodynamic systems, where there is no alpha-effect or it is insignificant, to perturbations involving large scales. I assume that the convective MHD state (steady or evolutionary), the stability of which I investigate, does not involve large spatio-temporal scales, and it is stable to perturbations involving the same small spatial scales, as the perturbed state. Mean-field equations, which I derive for the perturbation using asymptotic techniques for multiscale systems, are a generalization of the equations of magnetohydrodynamics (the Navier-Stokes and magnetic induction equations). The operator of combined eddy diffusivity emerges, which is in general anisotropic and not necessarily negatively defined, as well as new quadratic terms analogous to the ones describing advection.	**abstract**	I consider the problem of weakly nonlinear stability of three-dimensional parity-invariant magnetohydrodynamic systems to perturbations, involving large scales. I assume that the MHD state, the stability of which I investigate, does not involve large spatio-temporal scales, and it is stable to perturbations involving the same small spatial scales, as the perturbed MHD state. Mean-field equations, which I derive for the perturbation using asymptotic techniques for multiscale systems, are a generalization of the standard equations of magnetohydrodynamics (the Navier-Stokes equation with the Lorentz force and the magnetic induction equation). In them, the operator of combined eddy diffusivity emerges, which is in general anisotropic and not necessarily negatively defined, and new quadratic terms, analogous to the ones describing advection. A method for efficient computation of coefficients of the eddy diffusivity tensor and eddy advection terms in the mean-field equations is proposed.		
	versions		**versions**			