

Abstract Submitted  
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**Magnetic-field generation in helical turbulence**<sup>1</sup> STANISLAV BOLDYREV, FAUSTO CATTANEO, ROBERT ROSNER, (University of Chicago) — We investigate analytically the amplification of a weak magnetic field in a homogeneous and isotropic turbulent flow lacking reflectional symmetry (helical turbulence). We propose that spectral distributions of magnetic energy and magnetic helicity can be found as eigenmodes of the self-adjoint, Schrödinger-type system of evolution equations. This implies that large-scale and small-scale magnetic fluctuations cannot be effectively separated, and that the conventional  $\alpha$ -model is, in general, not an adequate description of the large-scale magnetic-dynamo mechanism. As a consequence, the correct numerical modeling of such processes should resolve magnetic fluctuations down to very small, resistive scales.

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