

Abstract Submitted  
for the DFD06 Meeting of  
The American Physical Society

**Smagorinsky constant in LES modeling of anisotropic MHD turbulence**<sup>1</sup> OLEG ZIKANOV, ANATOLIY VOROBEV, University of Michigan - Dearborn — Turbulent fluctuations in MHD flows can become strongly anisotropic or even quasi-two-dimensional under the action of an applied magnetic field. We investigate this phenomenon in the case of low magnetic Reynolds numbers. It has been found in earlier DNS and LES of homogeneous turbulence that the degree of anisotropy is predominantly determined by the value of the magnetic interaction parameter and only slightly depends on the Reynolds number, type of large-scale dynamics, and the length scale. Furthermore, it has been demonstrated that the dynamic Smagorinsky model is capable of self-adjustment to the effects of anisotropy. In this presentation, we capitalize on these results and employ dynamic model simulations to derive a simple and effective generalization of the traditional non-dynamic Smagorinsky model to the case of anisotropic MHD turbulence.

<sup>1</sup>The work is supported by the grant DE FG02 03 ER46062 from the US Department of Energy

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Date submitted: 01 Aug 2006

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