



CLAREMONT CENTER
for MATHEMATICAL SCIENCES

CCMS COLLOQUIUM

ACTIVE SCALAR EQUATIONS AND A GEODYNAMO MODEL

by

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Abstract: We discuss an advection-diffusion equation that has been proposed by Keith Moffatt as a model for the Geodynamo. Even though the drift velocity can be strongly singular, we prove that the critically diffusive PDE is globally well-posed. We examine the nonlinear instability of a particular steady state and use continued fractions to construct a lower bound on the growth rate of a solution. This lower bound grows as the inverse of the diffusivity coefficient. In the Earth's fluid core this coefficient is expected to be very small. Thus the model does indeed produce very strong Geodynamo action. This work is joint with Vlad Vicol.

Wednesday, September 12, at 4:15pm

Millikan 134, Pomona College

Refreshments at 3:45 p.m. in Millikan Foyer & wine and cheese after the talk in Harry's Room
(Millikan 209)

*The dinner will be hosted by Prof. Ellis Cumberbatch.
Please contact Prof. Cumberbatch if you are interested in attending the dinner*