

MATHEMATICS COLLOQUIUM

Locality and stability of the cascades of two-dimensional turbulence

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Abstract: In my talk, I will discuss the notion of locality as it pertains to the cascades of two-dimensional turbulence. The mathematical framework underlying our analysis is the infinite system of balance equations that govern the generalized unfused structure functions, first introduced by L'vov and Procaccia. As a point of departure we use a revised version of the system of hypotheses that was proposed by Frisch for three-dimensional turbulence. We show that both the enstrophy cascade and the inverse energy cascade are local in the sense of non-perturbative statistical locality. We also investigate the stability conditions for both cascades. We have shown that statistical stability with respect to forcing applies unconditionally for the inverse energy cascade. For the enstrophy cascade, statistical stability requires large-scale dissipation and a vanishing downscale energy dissipation. I will conclude with a careful discussion of the subtle notion of locality.

Date: Friday, **March 21, 2008**
Time: 3:00 pm – 4:00 pm
Place: J. Wiener Lecture Hall, MAGC 1.302

Refreshments will be served at 2:55pm.

For further information or for special accommodations, contact Dr. Karen Yagdjian at 381-2145, via email at yagdjian@utpa.edu, or visit www.math.panam.edu/colloquia.html