

Special PHYSICAL MATHEMATICS SEMINAR

NONLINEAR DYNAMICS OF 3D FLUID FLOW SEPARATION

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ABSTRACT:

In this talk, I describe a nonlinear theory for separation and attachment of steady and unsteady three-dimensional fluid flows on no-slip curved moving boundaries. The theory provides analytic criteria for locating the separation line and approximating the shape of separation surface. Based on nonlinear dynamical system techniques, the criteria identifies separation line and separation surface by locating nonhyperbolic unstable manifolds that collect and eject fluid particles from the boundary. I show numerical results confirming the above criteria and mention experimental work in progress.

MONDAY, JANUARY 22, 2007

2:00 PM

Building 2, Room 105

*Reception at 3:00 PM in Building 2, Room 349
(Applied Math Common Room)*

