

Center for Biocomplexity Colloquium

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“Revealing the mechanics of transport”

Tuesday, November 3, 2009

4:00pm

204 DeBartolo Hall

****Tea at 3:30pm in 257 Hurley****

Fluid motion has an intriguingly complex behavior. If dye is placed in the fluid, we may reveal fascinating stretching and folding of fluid blobs. If particles are suspended in the flow, their motion may appear coherent or chaotic. Are there underlying mechanisms, or structures, that organize the seemingly complex patterns of fluid motion we encounter in nature? In many cases, yes. These structures are akin to invariant manifolds commonly studied in dynamical systems theory. Locating these so-called Lagrangian coherent structures (LCS) will be the focus of this talk. The computation of LCS offers a transformative tool for studying fluid transport, providing insight often hidden from traditional perspectives. I will discuss how LCS are often computed and how they are being used to in practical applications, with an emphasis on studying blood flow mechanics in the cardiovascular system.