



**Speaker:** Stephen Preston  
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Wednesday, April 8, 2015  
4:00 PM  
117 Hayes-Healy Hall

**Title:** Another one-dimensional model for the 3D Euler equation.

**Abstract:**

Global existence for the 3D Euler equations is a famous open problem. Even in the axisymmetric case, the result is open, though recent numerical results suggest that solutions blow up in finite time. In this talk I will describe the geometric aspects of the 3D Euler equation (including Arnold's interpretation of it as a geodesic equation and some properties of its exponential map). With the geometric framework in mind, I will describe a one-dimensional model that has the same infinite-dimensional geometric properties, and in addition has a surprising number of similarities in terms of the Lagrangian analysis along particle paths. I will assume that the audience is comfortable with partial differentiation, integration by parts, and the basic ideas of differential geometry.