

**Meeting:** 1001, Evanston, Illinois, SS 11A, Special Session on Stability Issues in Fluid Dynamics

1001-35-424      **Alexander Shnirelman\***, Department of Mathematics and Statistics, Concordia University,  
Montreal, Canada. *Regularity of Variational Weak Solutions of the Euler Equations.*

The most natural way to construct solutions of the Euler equations is the variational one using the Least Action Principle. Unfortunately, this approach gives only generalized solutions which even have no definite velocity field. In the 2-dimensional case there is an additional structure of a continual braid. Using this structure we are able to prove regularity of the action-minimizing generalized solutions: they have a definite velocity field which is an  $L^2$ - weak solution of the Euler equations. The proof is based on a combination of measure-theoretical and topological ideas. (Received September 01, 2004)