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Aula Magna del Dipartimento  
di Fisica ed Astronomia  
ore 15.00

# Hydrodynamics of Onsager's vortex flow

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**Abstract:** Turbulent flows of incompressible liquid in two dimensions are comprised of dense systems of vortices. In 1949 Onsager suggested to treat vortices as a macroscopical system whose statistical properties are described by Gibbs ensemble [1]. In the talk I address hydrodynamics of the vortex fluid. This differs from Euler hydrodynamics of the original fluid, and features the anomalous stress, which yields a number of interesting effects. Some of them are: a deflection of stream lines, a correction to the Bernoulli law, accumulation of vortices in regions with high curvature in the curved space. Remarkably, the hydrodynamics of vortex flows is identical to that of electronic fluid in the fractional quantum Hall regime (FQHE). I will elaborate a deep relation between these two seemingly unrelated subjects.

[1] L. Onsager, Nuovo Cimento, Suppl. 6, 249, 279 (1949)