

Hydrodynamic Vortex on a Compact Surface: The "Steady Vortex Metric" and generalizations to higher dimensions

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Resumo/Abstract:

In this talk we will introduce a special metric on closed surfaces called "Steady Vortex Metric". This metric is characterized by the fact that the fundamental solution of the Laplacian is locally given by $\log(d)$ where $d=d(x,y)$ is the Riemannian distance between the points x and y . A generalization of this definition to higher dimensions is given. For surfaces, a "Steady Vortex Metric" always exist in any given conformal class of metrics. It is an open question if the same statement holds in higher dimensions.