

PHYSICAL MATHEMATICS SEMINAR

SCHOTTKY'S STORMS: CLASSICAL FUNCTION THEORY AND IDEAL FLUID MECHANICS

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ABSTRACT:

This talk will survey how a number of long-standing problems in ideal fluid mechanics can be solved using ideas from classical function theory dating back to Schottky, Klein and Poincaré (among others). The motivation for this investigation stems from the recent interest in the problem of modeling vortex motion in geometrically complicated domains (e.g. geophysical problems involving the motion of oceanic eddies around island topographies). In 1941, C.C. Lin contributed two important papers on the dynamics of point vortices around an arbitrary chain of islands (or other obstacles). However, his theory was not constructive. Using Lin's work as a basis, we will show how to provide a complete analytic theory for the motion of vortices in such geometrically complicated domains. The theory is constructive and a range of illustrative examples will be given, together with a discussion of various applications.

TUESDAY, MAY 2, 2006
2:30 PM
Building 3, Room 270



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