Rotating vortex patches.

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ABSTRACT:

In this talk we discuss some special vortex patches for the two-dimensional incompressible Euler equations which preserve their shape during the motion. The simplest examples are given by Rankine and Kirchhoff vortices which are subjected to a uniform rotation around their centers. According to the works of Deem-Zabusky and Burbea there is a general class of rotating vortex patches, called the V-states and bifurcating from the circle at the eigenvalues of a certain linearized operator. We will show that the V-states are convex and C? close to the circle. We will also analyze some results on the rotating patches with doubly connected domains. The lecture is based on joint works with Mateu and Verdera.