

Symmetry properties for the Euler equations and related semilinear elliptic equations

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In this talk, I will discuss one-dimensional and radial symmetry properties for the solutions of the stationary incompressible Euler equations in dimension 2 and some semilinear elliptic equations. I will show that a steady flow of an ideal incompressible fluid with no stagnation point and tangential boundary conditions in a two-dimensional strip is a parallel flow. The same conclusion holds for a bounded steady flow in a half-plane and in the whole plane. I will also discuss the case of circular flows in annular domains. The proofs are based on the study of the geometric properties of the streamlines of the flow and on one-dimensional and radial symmetry results for the solutions of some semilinear elliptic equations. The talk is based on some joint works with N. Nadirashvili.

REFERENCES

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