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# Separation for the stationary Prandtl equation

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## Abstract

The Prandtl equation describes the motion of an incompressible flow with small viscosity near an obstacle. When the flow is stationary, and in the presence of an adverse pressure gradient, some separation phenomena have been observed in experiments: there exists a point on the boundary of the obstacle beyond which a back flow sets in along the wall, and the boundary layer separates from the surface. This behaviour has been explained by physicists thanks to auto-similar multiscale formal expansions near the point of separation. The goal of this talk is to present a recent work with Nader Masmoudi in which we justify the separation and exhibit a separation profile and rate. Our proof relies on ideas developed by Merle and Raphaël in the context of singularity formation for the nonlinear Schrödinger equation.

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