Back flow of the Prandtl boundary layer

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Abstract

In this talk, we study the back flow point of the Prandtl boundary layer under an adverse pressure gradient. The occurrence of back flow is an important physical event in the evolution of boundary layer, which eventually leads to separation. For the two-dimensional unsteady Prandtl boundary layer equations, we obtain the existence of a back flow point on the boundary when the initial tangential velocity is strictly monotonic with respect to the normal variable, and the pressure gradient of the outer flow is adverse. This is a joint work with Shi-Yong Zhu.