

Abstract Submitted  
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**Circulation shedding in viscous starting flow past a flat plate**

MONIKA NITSCHKE, University of New Mexico, LING XU, Georgia State University — Numerical simulations of viscous flow past a flat plate moving in direction normal to itself reveal details of the vortical structure of the flow. At early times, most of the vorticity is attached to the plate. We introduce a definition of the shed circulation at all times and show that it indeed represents vorticity that separates and remains separated from the plate. Scaling laws for the shed circulation, and contributions to the shedding rate across various boundary components are presented, as well as their dependence on Reynolds number. The simulations provide benchmark results to evaluate simpler separation models such as point vortex and vortex sheet models. A comparison with vortex sheet results is included.

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