

1020-35-223

**Gui-Qiang Chen**, Northwestern University, and **Mikhail Feldman\***, University of Wisconsin-Madison. *Existence and regularity of solutions to shock reflection problem.*

We show existence of global solutions to shock reflection by large-angle wedges for potential flow. We reduce the shock reflection problem to a free boundary problem for a nonlinear elliptic equation, with ellipticity degenerate near a part of the boundary (the sonic line), and solve this problem by an iteration procedure. We also study optimal regularity of solutions near the sonic line. (Received August 28, 2006)