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Coauthors: Vladimir Sverak

SINGULARITIES OF COMPLEX SOLUTIONS OF BURGERS EQUATION

PETER POLACIK

We consider the one-dimensional viscous Burgers equation allowing the unknown function to take complex values. We show that some solutions develop singularities in finite time. We then address several questions concerning the structure of the singularities and the behavior of the solutions near their singularities. Via Cole-Hopf transformation we translate these problems to questions about zeros of complex-valued solutions of the heat equation. While the problems remain interesting and nontrivial, they can be tackled with rather elementary tools.

UNIVERSITY OF MINNESOTA

E-mail address: `polacik@math.umn.edu`