

Plastic limit of a viscoplastic Burgers equation

Prof. Dr. Marita Thomas, WIAS Berlin

We study the Burgers equation featuring an additional term governed by a positively 1-homogeneous potential. This problem is motivated by the so-called Hibler's sea ice model. It treats sea ice as a non-Newtonian fluid, where the stress tensor includes such a term in order to account for the plastic response of the ice.

For this simplified one-dimensional model we introduce a suitable notion of solution in the framework of BV-solutions. Starting in the regularized setting of a viscoplastic Burgers equation, we study the existence of such generalized solutions. We investigate the passage to the plastic limit and further discuss the properties of the solutions.

This is joint work with Edriss Titi (Cambridge) and Xin Liu (Texas A&M University), supported by the DFG within project C09 of CRC 1114.