Katrin Grunert

A Lipschitz metric for the Hunter–Saxton equation

Solutions of the Hunter–Saxton equation might enjoy wave breaking in finite time. This means that solutions in general do not exist globally, but only locally in time since their spatial derivative might become unbounded from below pointwise in finite time, while the solution itself remains bounded. Additionally, energy concentrates on sets of measure zero when wave breaking occurs. The prolongation of solutions beyond wave breaking is non-unique. We show how the stability of conservative solutions, i.e., solutions where the energy has not been manipulated at breaking time, can be analyzed by constructing a Lipschitz metric, which is based on the use of the Wasserstein metric.