

Energy consistent schemes for phase separation problems

Charalambos Makridakis^a

^a Department of Applied Mathematics, University of Crete, Greece

makr@tem.uoc.gr

We discuss numerical schemes for transport and higher-order PDEs describing dispersion/capillarity effects. These equations arise not only as models for solitary waves but also in multiscale modeling and in phase transitions. In particular we shall consider the isothermal Navier-Stokes Korteweg system for which we present thermodynamically consistent DG schemes. We discuss issues related to the error analysis of the approximations. We present recent results related to a posteriori error control of DG methods for dispersive type equations by utilizing appropriate local reconstructions.