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Non-blow up at large times and stability of global solutions to nematic liquid crystal flow

The flow of nematic liquid crystals is modeled by a system coupling the incompressible non-homogeneous Navier-Stokes equations and the transported harmonic maps heat flow to \mathbb{S}^2 . An almost optimal global well-posedness result was established by Wang [11'] for small initial velocity and orientation field in BMO^{-1} and BMO , respectively. In this talk, I will discuss the stability question for a priori global solutions. Large solutions are shown to be small at large times, a property which is inferred by the geometric condition. The role of this smallness property in the stability result will be highlighted.