Abstract Submitted for the DNP12 Meeting of The American Physical Society

r-modes in Quark Stars with a Crystalline Superconducting Crust GAUTAM RUPAK, Mississippi State University, PRASHANTH JAIKUMAR, California State University, Long Beach — The r-mode instability in rotating compact objects provide strong constraints on the equation of state of dense matter. Calculations with quark matter in the color-flavor-locked (CFL) phase with or without kaon condensation indicate that the viscous damping in the superfluid matter due to Goldstone-Nambu boson scattering is not sufficient to explain the observed rotation rates in cold compact objects. We consider a star composed of a core made of CFL quark matter and a thin crust of crystalline color superconducting quark matter. The decay of the r-modes at the boundary with the crust that has a high shear modulus provides additional damping mechanism that can make the theoretical model compatible with observation.

> Gautam Rupak Mississippi State University

Date submitted: 03 Jul 2012

Electronic form version 1.4