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Non-radial Modes of Oscillation in Neutron Stars and Quark Stars: Modes f, p and g. JESSICA ASBELL, PRASHANTH JAIKUMAR, California State University, Long Beach — Efforts to determine the internal compositions of compact stars focus largely on the observation and interpretation of non-radial oscillations that occur when these bodies are perturbed in pressure, buoyancy and gravity. Future observations of these oscillations can distinguish between stars comprised of nuclear matter and possibly quark matter. This work presents a comparison of the f, p and g-mode spectra for both neutron and strange quark equations of state. In particular, g-modes, which result from fluctuations in buoyancy, are sensitive to convective gradients, as well as chemical and thermal inhomogeneities. The gmodes we study arise from buoyancy effects in the core and have frequencies of tens of Hertz. We find that the p-modes for quark matter are much higher in frequency (tens of kilohertz) than for neutron matter (few kilohertz). By exploring the MIT Bag model for quark matter we find that the average density and the f-mode, tracks linearly with the MIT bag constant. These results pave the way to model and understand the gravitational wave signals emitted by oscillating neutron or strange quark stars.

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