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Maximum mass and universal relations of hadron-quark hybrid stars[1] PEDRO ESPINO, GABRIELE BOZZOLA, COLLIN LEWIN, VASILEIOS PASCHALIDIS, University of Arizona — Hadron-quark hybrid stars are compact stars with a deconfined quark core surrounded by hadronic matter, which are compatible with the observation of the gravitational wave event GW170817. To better understand the properties of possible binary neutron star merger remnants, it is crucial to properly characterize the solution space of hybrid stars. We construct equilibrium models of uniformly and differentially rotating hybrid stars using equations of state (EOSs) with a first-order phase transition. Contrary to the case of purely hadronic stars, we find that the ratio of the maximum possible mass of uniformly rotating configurations to the Tolman-Oppenheimer-Volkoff limit mass is not EOS-independent. Hence, some of the constraints placed on the nuclear EOS from GW170817 do not apply to hadron-quark EOSs. We also present our findings on universal relations and maximum mass for both uniformly and differentially rotating hybrid stars.

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