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Was GW190814 a Black Hole–Strange Quark Star System?

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The gravitational waves event GW190814 originated from the merger of a 23Msun black – hole and a compact object of 2.6 Msun. The nature of the low mass companion is quite puzzling since it could be either the lightest black -hole or the heaviest neutron star ever known. In particular, if such massive neutron stars do exist, it seems to be difficult to reconcile the indications from data suggesting a not too stiff equation of state of dense matter (such as e.g GW170817) and the possibility that the equation of state is instead so stiff to allow for a maximum mass value above 2.6Msun. In this talk, I will discuss the possibility that the low mass companion of the GW190814 system is a strange quark star, within the so-called two-families scenario. In this scenario hadronic stars and strange quark stars coexist, the first family being characterized by light and very compact stars (in which delta resonances and hyperons do form) and the second family composed by massive and large strange quark stars. The many phenomenological implications of this scenario, also in connection with future gravitational waves detections, will also be discussed.

The talk is based on the recent PRL 126 (2021) 162702.

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