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Was GW190814 a Black Hole – Strange Quark Star system?

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In this talk I discuss the possibility that the low mass ($2.50 - 2.67 M_{\odot}$) companion of the $23 M_{\odot}$ black hole in the binary merger which produced GW190814 was a strange quark star. This possibility is viable if two families of compact stars, viz., “normal” neutron stars and strange quark stars, can coexist in nature, and neutron stars can get converted into strange quark stars.

The scenario with two coexisting families of compact stars could ease the tension between several observational data that seem to suggest the existence of very compact stars with radii smaller than about 12 km and masses of about $1.4 - 1.5 M_{\odot}$ and the existence of more massive compact stars with radii up to about 15 -16 km. The latter circumstance could be realized in the case of the high mass ($2.08 \pm 0.08 M_{\odot}$) millisecond pulsar J0740+6620 as revealed by the recent measurement of its radius by the NICER Team (Miller et al, arXiv:2105.06979).

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