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GW190814: implications on the maximum mass of neutron stars
ELIAS MOST, Princeton University, JENS PAPENFORT, LUKAS WEIH, LUCIANO REZZOLLA, Goethe University Frankfurt am Main — The gravitational wave event GW190814 was the result of the merger of a $\sim 23\,M_\odot$ black hole with a secondary object having a mass of $\sim 2.6\,M_\odot$. This secondary could either have been the lightest black hole or the most massive neutron star ever observed. In this talk, I will argue that the secondary could well have been a neutron star at some point before or at merger, if it was rapidly spinning. Using universal relations connecting the masses and spins of uniformly rotating neutron stars, I will show how to estimate the dimensionless spin $0.49 < \chi < 0.68$ and to compute a strict lower limit on the maximum mass, $M_{\rm TOV} > 2.08^{+0.04}_{-0.04}\ M_\odot$, of nonrotating neutron stars. In the remainder of the talk, I will also comment on the implications of this for maximum mass bounds coming from the GW170817 gravitational wave event.

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