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Why neutron stars have three hairs LEO STEIN, Cornell University, KENT YAGI, Montana State University, GEORGE PAPPAS, University of Nottingham, NICOLAS YUNES, Montana State University, THEOCHARIS APOSTOLATOS, University of Athens — Neutron stars have recently been found to enjoy a certain 'baldness' in their multipolar structure which is independent of the equation of state (EoS) of dense nuclear matter. This is reminiscent of the black hole no-hair relations, and in stark contrast to regular stars. Why is this? Is it because realistic EoSs are sufficiently similar, or because GR effects are especially important, or because the nuclear matter is 'cold'? We explore the physics behind these and more hypotheses, and give a convincing explanation for the true origin of the three-hair relations.

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