Neutron star interiors and the equation of state of superdense matter

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ABSTRACT: Neutron stars contain matter in one of the densest forms found in the Universe. This feature, together with the unprecedented progress in observational astrophysics, makes such stars superb astrophysical laboratories for a broad range of exciting physical studies. This talk gives an overview of the phases of dense matter predicted to make their appearance in neutron stars. Particular emphasis will be put on the role of strangeness. Strangeness is carried by hyperons, mesons, H-dibaryons, and strange quark matter, and may leave its mark in the masses, radii, cooling behavior, surface composition and the spin evolution of neutron stars.