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QCD in Neutron Stars and Strange Stars[1] FRIDOLIN WEBER, Department of Physics, San Diego State University — 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, several of which are intimately connected to QCD. This talk summarizes the role of QCD for neutron stars and strange stars. Particular emphasis will be put on the role of strangeness. Strangeness is carried by hyperons, mesons, H-dibaryons, and color superconducting strange quark matter, and may leave its mark in the masses, radii, cooling behavior, surface composition and the spin evolution of neutron stars. I also discuss the effects of a net electric charge distribution on the bulk properties of strange quark stars. Depending on the amount of electric charge distributed over the surface of such objects, the mass-radius relationship of strange quark stars may deviate substantially from the standard mass-radius relationship of electrically uncharged stars. This finding is of key importance for the properties of hypothetical strange quark stars made of color superconducting quark matter, since these objects could possess electric surface fields strong enough to alter the mass-radius relationship significantly.

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