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A G(2)-QCD Neutron Star

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G2-QCD, i.e. QCD with the gauge group SU(3) replaced by the exceptional group G(2), shares many features with SU(3). But it is accessible at finite density on the lattice, as it has no sign problem, and at the same time has a neutron.

Therefore, this theory can sustain in princple neutron star. Using the equation of state for this theory from lattice simulations, we solve the Oppenheimer-Volkoff equation and obtain the mass-radius-relation of such neutron stars.

This study shows how different phases, visible in the equation of state, influence the mass-radius relation, and therefore gives guidance for the case of full QCD and true neutron stars.

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