



Contribution ID: 554

Type: **Poster**

Cold quark matter in astrophysics of compact stars

Thursday, August 16, 2012 4:00 PM (2 hours)

I discuss the structure and composition of massive (two solar-mass) neutron stars containing deconfined quark matter in color superconducting states. Stable configurations featuring such matter are obtained if the equation of state of hadronic matter is stiff above the saturation density, the transition to quark matter takes place at a few times the nuclear saturation density, and the repulsive vector interactions in quark matter are substantial. I also discuss our recent progress in understanding the cooling of massive compact stars with color superconducting quark cores.

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Session Classification: Poster Session Reception

Track Classification: QCD at finite temperature and density