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Neutron Matter from Low to High Density

Friday 2 September 2016 09:30 (30 minutes)

I will discuss the properties of neutron matter from very low to very high density. At low densities dilute neutron matter is very similar to cold atoms with an energy nearly a constant times the Fermi gas and a very large pairing gap. At higher densities the superfluid pairing is dramatically reduced. Above saturation densities the equation of states controls the mass radius relation of neutron stars, eventually transitioning to one or more quark phases. We review the results for low and intermediate densities and discuss the prospects for determining the high-density equation of state.

Summary

Superfluidity and the equation of state of neutron matter from very low density to very high densities will be discussed, reviewing results to date and discussing future prospects.

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