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# Effects of charge neutrality and beta equilibrium on the magnetic dual chiral density wave phase in dense QCD

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Recent work has suggested that the magnetic dual chiral density wave (MDCDW), an inhomogeneous condensate that arises in dense QCD in a magnetic field, is an appealing candidate phase for the description of matter in the core of compact stars. For example, the nontrivial topology in its fermion spectrum gives it a high critical temperature and allows it to avoid the Landau-Peierls instability, which destabilizes most other inhomogeneous phases at finite temperatures. However, previous studies have not yet examined this phase under the conditions of charge neutrality and beta equilibrium, which more realistically reflect the environment within compact stars. We are investigating charge neutral, beta equilibrated MDCDW, determining how these conditions affect the order parameters and critical temperature. We also examine the effects of neutrality and beta equilibrium on the small but nonzero remnant mass that persists at large densities in a magnetic field, which may lead to interesting chiral transport behavior.

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