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Vortex excitation and quark spectrum in color ferromagnetic state in cold dense matter MUNEHISA OHTANI, RIKEN, AIICHI IWAZAKI, Nishogakusha University, OSAMU MORIMATSU, TETSUO NISHIKAWA, KEK — We show a possibility that there exists a color ferromagnetic state in quark matter, in which a color magnetic field is spontaneously generated. The state arises between the hadronic state and the color superconducting state when the density of quarks is varied. We find a vortex solution in the color ferromagnetic state as an analogue of a quasi-particle in the quantum Hall state. We analyze the vortex excitation energy and quark spectrum to discuss the stability of the color ferromagnetic state in comparison with the color superconducting phase.

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