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Observation of Deconfinement in a Cold Dense Quark Medium

Thursday 9 August 2018 16:20 (30 minutes)

We present the recent results on the confinement/deconfinement transition in lattice SU(2) QCD with two flavors of quarks at finite quark density and zero temperature. In the region $\mu q \sim 1000$ MeV we observe the confinement/deconfinement transition which manifests itself in rising of the Polyakov loop and vanishing of the string tension σ . After the deconfinement is achieved at $\mu q > 1000$ MeV we observe a monotonous decrease of the spatial string tension σ s which ends up with σ s vanishing at $\mu q > 2000$ MeV. To study the properties of cold dense quark medium we measure the dependence of chiral and diquark condensates, quark density, topological susceptibility and other physical quantities on the chemical potential.

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