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BSM searches with the ATLAS detector

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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 μq ~ 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 μq > 1000 MeV we observe a monotonous decrease of the spatial string tension σs which ends up with σs vanishing at μq > 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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