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Strongly interacting matter at RHIC: experimental highlights

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Recent experimental results obtained at the relativistic heavy-ion collider (RHIC) will be discussed. Investigations of different nuclear-nuclear collisions in recent some years focus on two main tasks, namely, detail study of sQGP properties and exploration of the QCD phase diagram. Results at top RHIC energy provide important information about event shapes as well as transport and thermodynamics properties of the hot medium for various flavors. Heavy-ion collisions are unique tool for the study of topological properties of theory. Experimental results obtained for discrete QCD symmetries at finite temperatures are discussed. These results confirm indirectly the topologically non-trivial structure of QCD vacuum. Most results obtained during stage I of the RHIC beam energy scan (BES) program show smooth behavior vs initial energy. However certain results suggest the transition in the domain of dominance of hadronic degrees of freedom at center-of-mass energies between 10–20 GeV. Future developments and more precise studies of features of QCD phase diagram in the framework of stage II of RHIC BES will be briefly discussed.

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