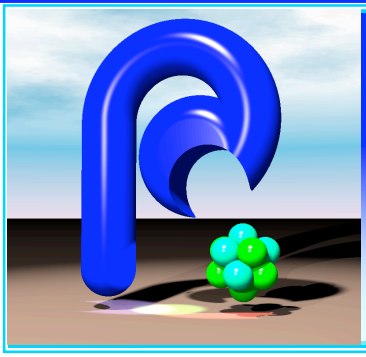

独立行政法人 理化学研究所

第２回 原子核グループ月例コロキウム

The 2nd RIKEN Nuclear Physics Monthly Colloquium

The quest for the Quark-Gluon-Plasma

- Highlights of the RHIC Program -

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Duke University and RIKEN-BNL Research

Abstract

Hadronic matter - matter susceptible to the strong interaction force - is described by quantum-chromo-dynamics (QCD). The basic constituents of QCD are quarks which interact through the exchange of gluons. It is believed that shortly after the creation of the universe in the Big Bang all matter was in a state called the Quark Gluon Plasma (QGP). Due to the rapid expansion of the Universe, this plasma went through a phase transition to form hadrons – most importantly nucleons - which constitute the building blocks of (nuclear) matter as we know it today. The investigation of QGP properties will yield important novel insights into the development of the early universe and the behaviour of QCD under extreme conditions.

It is hoped to recreate this highly excited state of primordial matter under controlled laboratory conditions using relativistic heavy ion collisions, e.g. at the Relativistic Heavy Ion Collider (RHIC) at Brookhaven National Laboratory. Results of the first years of RHIC operations have yielded exciting evidence for the transient creation of a system of deconfined quarks and gluons. In my talk I will review the current status of QGP research and discuss the latest results and highlights from experiments at the Relativistic Heavy-Ion Collider and their implications.

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Nishina Hall, Wako

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