Subnuclear System Research Division
RIKEN BNL Research Center

1. Abstract

The RIKEN BNL Research Center was established in April 1997 at Brookhaven National Laboratory with Professor T. D. Lee of Columbia University as its initial Director. The Center is dedicated to the study of strong interactions, including spin physics, lattice QCD and RHIC physics through the nurturing of a new generation of young physicists. Professor Lee was succeeded by BNL Distinguished Scientist, the former BNL director, N. P. Samios, who served until 2013. The other former BNL director, S. H. Aronson led the Center from 2013. Hideto En'yo succeeded the director position starting from JFY 2017. Support for RBRC was initially for five years and has been renewed four times, and presently extends to March 2023. The five year extension from April 2023 is agreed between BNL and RIKEN in order to cover the era of sPHENIX experiment which is the upgraded of the PHENIX experiment. Theoretical activities in the RBRC Theory and Computing Groups are closely and intimately related to those of the Nuclear Theory, High Energy Theory and Lattice Gauge Theory Groups at BNL. The RBRC Experimental Group jointly works with Radiation Laboratory at Wako RIKEN, the RHIC Spin Group at BNL, the RHIC Spin Physics community, and the PHENIX/sPHENIX collaboration. Radiation Laboratory at Wako is closed in March 2022, and its functions are taken over by the new laboratory "RHIC Physics Research Group" headed by Y. Akiba. BNL provides office space, management, computing and administrative support. The Deputy Director of RBRC is D. Morrison (BNL). In May 2021 Y. Hatta (BNL) becomes Theory Group leader, succeeding D. Kharzeev. Y. Akiba (RIKEN) is Experimental Group leader and T. Izubuchi (BNL) is Computing Group leader.

2. Major Research Subjects

Major research subjects of the theory group are
(1) Spin structure of proton;
(2) Gluon saturation at small-x;
(3) Physics of quark gluon plasma.

Major research subjects of the computing group are
(1) Search for new law of physics through tests for Standard Model of particle and nuclear physics;
(2) Dynamics of QCD and related theories;
(3) Theoretical and algorithmic development for lattice field theories, QCD machine design.

Major research subject of the experimental group are
(1) Experimental Studies of the Spin Structure of the Nucleon;
(2) Study of Quark-Gluon Plasma at RHIC;
(3) sPHENIX detector construction.

3. Summary of Research Activity

Summary of Research Activities of the three groups of the Center are given in the sections of each group.

Members

Director

Hideto EN'YO

Deputy Director

David P. MORRISON

Administrative Staff

Keiko IWANO (Administration Manager)
Pamela ESPOSITO (Administrative Assistant)
Maureen MCNEIL-SHEA (Administrative Assistant)

List of Publications & Presentations

Publications

[Original Papers]

See the lists of each group.

Presentations

[Seminars]

H. En'yo, "Forty academic years with physics of high density nuclear matter (in Japanese)", Heavy Ion Pub, Nagoya University, Online, November 12, 2021.

H. En'yo, "My 40 years seeking for the new phase of nuclear matter (in Japanese)", ELPH Seminar, Research Center for Electron Photon Science (ELPH), Tohoku University, Sendai, Japan, Hybrid, December 23, 2021.

Press Release

Direct Photons Offer Glimpse of Gluons' Dynamic Motion—PHENIX data validate approach for future studies of proton spin and structure—, October 12, 2011.
https://www.bnl.gov/newsroom/news.php?a=119077,
https://www.riken.jp/press/2021/20211015_1/index.html .