

Memorandum of Understanding
between
Wigner Research Centre for Physics, Hungarian Academy of Sciences
and
National Institution of Science Education and Research, Jatni, India

Concerning Cooperation in the Fields of Computational and High Energy Nuclear Physics

This Memorandum of Understanding (MOU) is between the National Institution of Science Education and Research (NISER) and Wigner Research Centre for Physics of the Hungarian Academy of Sciences (WIGNER). NISER is a leading institute in the field of high-energy nuclear physics in India with a rapidly growing school of computer sciences. WIGNER is the leading institute in computational sciences and particle and nuclear physics in Hungary.

NISER and WIGNER are collectively herein referred to as "Participants" or separately as "Participant."

1. Objective

The purpose of this MOU is to reach an agreement on collaboration between the Participants in the field of high-energy nuclear physics and computational sciences.

2. Areas of Planned Collaboration

- A. The Participants agree to collaborate in computational and high-energy nuclear physics on the following subjects:
- i. Hadronization of quark-gluon plasma, fluctuations and correlations
 - ii. Application of the non-extensive statistical approach
 - iii. Finite temperature field theory
 - iv. Physics of strongly interacting matter at extreme energy densities, ALICE at LHC
 - v. Detector development for high energy physics experiments and applications
 - vi. Computational physics, neural sciences, artificial intelligence
 - vii. Privacy preserving machine learning and data sciences

The scope of above activities and cooperation may be changed or extended to other areas by mutual written consent of the Participants.

- B. Collaboration on the above subjects will be carried out through joint research activities, extended visits by the participating researchers, jointly organized working group meetings and international workshop and conferences, and joint training of students and postdoctoral fellows



C. The above activities and collaborations will be involving the following researchers:

i. NISER:

Bedangadas Mohanty, Professor,

area of expertise: Experimental High Energy Nuclear Physics and Phenomenology of Heavy-ion collisions

Tapan K. Nayak, Guest Professor,

area of expertise: Experimental High Energy Nuclear Physics

Victor Roy, Assistant Professor,

area of expertise: High-energy heavy-ion, QGP, relativistic hydrodynamics

Amaresh Jaiswal, Assistant Professor,

area of expertise: Theoretical High Energy Nuclear Physics

Najmul Haque, Assistant Professor,

area of expertise: Theoretical High Energy Physics

Ranbir Singh, Scientific Officer,

area of expertise: Experimental high energy nuclear physics

Varchaswi KS Kashyap, Scientific Officer,

area of expertise: Detector developments

Rishiraj Bhattacharyya, Reader-F,

area of expertise: Cryptography, Statistical Learning Theory

Subhankar Mishra, Assistant Professor,

area of expertise: Cyber Security, Data Sciences

ii. WIGNER:

Péter Lévai, Research Professor and Director General of WIGNER,

area of expertise: hard probes and phenomenology.

Gergely Gábor Barnaföldi, Senior research fellow, Head of HIRG, Wigner GPU Lab.

area of expertise: hard probes and phenomenology, computing.

Tamás Sándor Biró, Scientific Advisor, Vice-director of the RMI

area of expertise: non-extensive thermo- and relativistic hydrodynamics.

Robert Vértesi, Senior research fellow, Head of the HEP Research Group

area of expertise: high-energy nuclear physics, data analysis,

András Telcs, Professor, Scientific Advisor, Head of Computational Physics

area of expertise: computational physics & neuroscience, mathematics

Tamás Kiss, Senior research fellow,

area of expertise: computational neuroscience, neuro-pharmacology

Zoltán Somogyvári, Senior research fellow,

area of expertise: neuroscience, electrophysiology, data analysis.

László Négyessy, Senior research fellow,

area of expertise: neuroscience, analysis of brain network

Gergő Orbán, Senior research fellow.

area of expertise: computational neuroscience, cognitive neuroscience

The number of researchers may be changed or extended to include others by mutual written consent of the Participants.

3. Designated Representatives

- A. To administer the implementation of this MOU, each Participant should designate one principal coordinator in charge of the collaboration, through whom all requests and plans of that Participant should be made.
- B. The designated representatives may hold meetings when necessary to discuss matters related to collaboration under this MOU.
- C. The designated representative for NISER is **Bedangadas Mohanty**, Dean of Faculty of the National Institution of Science Education and Research. The designated representative for WIGNER is **Gergely Gábor Barnaföldi**, Head of the Heavy Ion Research Group & Wigner GPU Laboratory, and the Hungarian ALICE Group.

4. Commencement, Modification and Discontinuation

- A. Collaborative activities under this MOU commence upon signature and continue for five (5) year period, unless discontinued in accordance with Paragraph B of this Section 4.
- B. The Participants may discontinue this MOU at any time in writing. A Participant that wishes to discontinue its participation in this MOU should endeavour to provide at least thirty (60) days written notice to the other Participant.
- C. This MOU may be modified in writing by mutual consent of the Participants, and may be extended for additional periods.

5. General Considerations

- A. Each Participant should conduct the activities contemplated by this MOU in accordance with all applicable laws, regulations and other requirements to which it is subject, including, without limitation, and environment, health and safety laws and regulations.
- B. This MOU does not create any legally binding obligations.
- C. The conduct of collaborative activities contemplated by this MOU is subject to the availability of funding, personnel, and other resources.
- D. Each Participant is responsible for the costs it incurs in participating in cooperative activities under this MOU.

Signed in duplicate.

NISER – NATIONAL INSTITUTION OF
SCIENCE EDUCATION AND
RESEARCH

By:

Name: Prof. Sudhakar Panda Prof. Sudhakar Panda

Title: Director निदेशक/Director
National Institute of Science Education & Research, BBSR
परमाणु ऊर्जा विभाग/Department of Atomic Energy
भारत सरकार/Government of India

Date: April 9, 2019

WIGNER – WIGNER RESEARCH
CENTRE FOR PHYSICS,
HUNGARIAN ACADEMY OF
SCIENCES

By:

Name: Dr. Péter Lévai

Title: Director General of WIGNER RCP

Date: April 9, 2019

