

2017 HGF – GSI – OCPC – Programme for the involvement of postdocs in bilateral collaboration projects

Part A:

Title of the project:

Study of quark-gluon plasma produced in collisions of heavy ions at ultra-relativistic energies with data recorded by ALICE at the LHC

Helmholtz Centre and institute:

GSI Helmholtzzentrum für Schwerionenforschung, Darmstadt

Project leader:

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Web-address:

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Department: (at the Helmholtz centre or Institute)

ALICE

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Description of the project (max. 1 page):

The ALICE group at GSI is strongly involved in the experiment activities with

- 1) the operation of central detector systems such as the Time Projection Chamber and the Transition Radiation Detector,
- 2) detector calibration and event reconstruction, and
- 3) several physics analyses of lead-lead, proton-lead and proton-proton collision data.

The project proposed consists in data analysis in one the major areas of research of the group: investigation of charmonium and open-heavy-flavor hadron production; study of particle flow and correlations; determination of the properties of (anti-)(hyper-)nuclei produced in hadronic collisions. The selected candidate will have the opportunity to analyse ALICE data from the LHC Run-1 and Run-2, join the various activities and responsibilities of the group in the Collaboration (software developments, shifts, etc.) and participate to the scientific initiatives at GSI/FAIR and the nearby Universities (GSI/FAIR colloquium, EMMI seminars and workshops, possibly the education of young students via teaching and/or supervision of bachelor and master thesis work).

One of the above mentioned topics will be chosen at the time of the candidate selection and

appointment. The candidate will conduct his research work in the ALICE group composed of nine staff scientists, two collaborating post-docs and eight doctoral students.

GSI also profits from an excellent computing infrastructure (with a multi-petabytes storage system and a high performance cluster with more than 10,000 computing nodes). Innovative approaches for CPU-intensive analyses of big data (input-output dominated) are being developed, in view of the O² (Online-Offline) system for the upgraded ALICE and in preparation for the tremendous data challenges of the future CBM and PANDA experiments at FAIR. Active involvement in these developments will be possible and encouraged.

Description of existing or sought Chinese collaboration partner institute (max. half page):

Existing collaboration with Prof.Dr. Daicui Zhou and Dr. Yaxian Mao (ALICE group)
Institute of Particle Physics
Central China Normal University (CCNU)
Key Lab. of Quark & Lepton Physics(CCNU), MoE
Wuhan 430079 China

Further participation in ALICE and STAR experiments:

- China Institute of Atomic Energy, Beijing, China (Xiaomei Li)
- University of Science and Technology of China, Hefei (Zebo Tang, Yifei Zhang, etc)
- Shanghai Institute of Applied Physics (Song Zhang, Chen Zhong, Wei Li)

Required qualification of the post-doc:

- PhD in Physics
- Experience with data analysis in the field of heavy-ion physics
- Additional skills in programming for data analysis
- Language requirement: English

Part B:

Documents to be provided by the post-doc:

- Detailed description of the interest in joining the project (motivation letter)
- Curriculum vitae (CV)
- copies of degrees as a proof of education qualification
- List of publications (if any)
- 2 letters of recommendation

Part C:

Additional requirements to be fulfilled by the post-doc:

- PhD degree not older than 5 years
- Very good command of the English language
- Strong ability to work independently and in a team