Contribution ID: **56** Type: **not specified**

Ultra-relativistic Heavy-Ion Collisions: Inputs of the Italian community for the ESPPU 2018–2020

This document was prepared by the community that is active in Italy, within INFN (Istituto Nazionale di Fisica Nucleare), in the field of ultra-relativistic heavy-ion collisions. The experimental study of the phase diagram of strongly-interacting matter and of the Quark–Gluon Plasma (QGP) deconfined
state will proceed, in the next 10–15 years, along two directions: the high-energy regime at RHIC and at the LHC, and the low-energy regime at FAIR, NICA, SPS and RHIC.The Italian community is strongly involved in the present and future programme of the ALICE experiment, the upgrade of which will open, in the 2020s, a new phase of high-precision characterisation of the QGP properties at the LHC. The community also contributes to the heavy-ion programme of the LHCb experiment. The physics case of a very-high-luminosity programme in the 2030s at the LHC using intermediate-mass nuclei is considered with interest. In addition, there is a growing interest in a possible future experiment at the SPS, which would primarily target the search for the onset of deconfinement using dimuon measurements. The strong expertise of the community in detector development and construction, in particular in the sector of low-material silicon trackers, can serve as a common basis for these new projects at the LHC and SPS.On a longer timescale, the community participates in the ongoing studies for a heavy-ion programme at the Future Circular Collider or the High Energy LHC.

Authors: DAINESE, Andrea (INFN - Padova (IT)); BRUNO, Giuseppe (Universita e INFN, Bari (IT)); SCOMPARIN, Enrico (Universita e INFN Torino (IT)); USAI, Gianluca (Universita e INFN, Cagliari (IT))

Track Classification: Strong interactions (perturbative and non-perturbative QCD, DIS, heavy ions)