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Long-term plans of the ALICE Collaboration

The ALICE collaboration would like to contribute to the discussion about the future strategy in particle physics for the coming decade, in the field of high-energy nuclear physics. This initiative comes in time, while we are preparing an upgrade of the ALICE detector, in order to fully exploit the scientific potential of the LHC as a heavy-ion collider. With the planned upgrades, this field of research will move from the present exploratory phase to an era of high-statistics precision measurement. This will allow a detailed characterization of the high-density, high-temperature phase of strongly interacting matter, and detailed tests of the fundamental predictions of the theory. In the following, we outline the basic physics motivation for running the LHC with heavy ions at high-luminosities and summarize the performance gains expected with the upgraded ALICE detector. With the proposed timeline, starting the high-rate operation progressively after 2018 shutdown, the objectives of our upgrade plans should be achieved collecting data until the mid-2020's. We expect that this programme of research will be considered as a high-priority item by the European Strategy Group.

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