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Initial INFN input on the update of the European Strategy for Particle Physics - The Astroparticle Physics Commission 2

This document contains some initial input from the INFN Astroparticle Physics Commission 2 (CSN2) to the update of the European Strategy for Particle Physics.

It does not aim at providing a comprehensive overview of the CSN2 activities nor to cover all possible relevant aspects of the Strategy: this will be defined with the other actors all along the update process, from the Open Symposium of May 2019 to the Strategy Drafting Session of January 2020. It aims instead at emphasising the CSN2 activities which are or might be connected in the near future to Particle Physics programs and to CERN activities. In particular, is therefore devoted to a short description of the activities on: the study of neutrino oscillations by means of neutrino beams; the direct search of dark matter in underground laboratories, particularly by means of noble liquid detector; the observation of Gravitational Waves sources in the Universe and the study of fundamental laws of physics by means of Gravitational Waves.

The content of this document takes into account the information presented and the extensive discussions held at a National INFN "Town Meeting", which took place in Rome on 6-7 September 2018: <https://agenda.infn.it/conferenceOtherViews.py?view=details&id=11111> and the content of a document that is currently in preparation and that will be made public well before the May 2019 Symposium. This document will cover in details all scientific activities supported by the CSN2.

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Track Classification: National road maps