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The NUSES space mission

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NUSES is a space mission project promoted by the Gran Sasso Science Institute (GSSI) in collaboration with Thales Alenia Space Italy and the Italian National Institute for Nuclear Physics (INFN) with the aim at investigating cosmic radiation, astrophysical neutrinos, Sun-Earth environment, space weather and possible signals of magnetosphere-ionosphere-lithosphere coupling (MILC) phenomena.

Beside its wide scientific program, the NUSES mission will be a technological pathfinder for the development and test of innovative technologies and observational strategies for future missions.

The NUSES satellite bus will host two payloads: TERZINA and ZIRE².

The first will consist of a compact optical Cherenkov telescope based on the use of state-of-art of Silicon Photomultipliers (SiPMs) for the detection of astrophysical neutrinos interacting with the Earth atmosphere and generating upgoing extensive air showers.

TERZINA will be also instrumental for the characterization of the Cherenkov signals due to cosmic ray induced showers and of the night-sky background. The second payload, ZIRE², will be tailored to provide measurements of the flux intensity of electrons, protons and light cosmic ray nuclei with energies up to several hundreds of MeV.

ZIRE² will be also equipped with an innovative X and gamma ray telescope prototype, designed to be operative in the MeV energy range.

In this talk, the status of the NUSES project design will be discussed along with the scientific and technological objectives of the mission.

In-person participation

Yes

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Session Classification: Detectors for Future Facilities, R&D, novel techniques

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