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Status of the COMET experiment

Friday, September 2, 2022 1:00 PM (30 minutes)

COMET is an experiment at the Japan Proton Accelerator Research Complex (J-PARC), which will search for coherent neutrinoless tran- sition of muons to electrons in the coulomb eld of atomic nuclei (⊠– + N ⟶ ⊠– + N). Since this process violates charged lepton avor conservation it is highly suppressed in the Standard Model and thus provides a promising channel to probe new physics.
In order to realize the stringent requirements on detector system and muon beam the COMET experiment will follow a staged approach.
Phase-I is currently under construction at J-PARC and is aiming to improve the current branching ratio limit of 7×10−13 by two orders of magnitude. On top of the physics measurement a precise muon beam measurement will be conducted.
In Phase-II the branching ratio limit will be additionally improved by at least two orders of magnitude. Re nements of the experimental design based on ongoing investigations and experience gained from Phase-I will be used to push this even further for a total improvement of ve orders of magnitude.
This talk will give an experimental overview of both phases, along with recent updates of the facility and the current detector develop- ment status.

Scientific topic

Future Facilities

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