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Status of the COMET experiment

Friday 2 September 2022 13:00 (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 ($\square + N \rightarrow \square - + N$). 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 $7 \times 10-13$ 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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