

Reviewing report on the paper;

Title: Status of the COMET Experiment at J-PARC

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The paper describes the current status of the muon-to-electron ( $\mu$ -e) conversion experiment at J-PARC (COMET). Physics motivation of the  $\mu$ -e conversion is shown at first including current experimental situation, and brief explanations of the COMET experiment and its preparation status follow.

Charged lepton flavor violation, like  $\mu$ -e conversion, is one of the most attractive subjects in the field of particle physics. The COMET experiment has an ability to reach two (four) orders of magnitude better sensitivity than the current limit in its Phase-I (II). The experiment has been partially funded and is now a sort of on-going experiment. The paper provides us the information of this interesting experiment and thus is worth publishing.

The structure of the paper is proper, including the citation. However, there are points to be improved or corrected before acceptance in the current manuscript. Followings are suggestions and/or questions.

Section 1, Line 10

“Among CLFV processes, one of the most prominent one”

→ “... the most prominent ones”, or simply just “One of the most prominent CLFV processes”

Section 1, L12

“ $\mu$ -e conversion would occur in the following manner.”

→ This should be deleted since following sentences don't describe  $\mu$ -e conversion itself.

Section 1, L17

“ratio [2], one possible”

→ “ratio [2]. One possible”; It is better to divide the sentence into two.

Section 1, L18-19

“the simplicity and distinctive signal”

→ “the simple and distinct (distinctive?) signal”

Section 1, L20 (equation)

What does the subscript “mec” represent?

Section 1, L22

“without accidentals and extremely high rates”

Does this mean “without accidentals and thus in extremely high rates”?

Section 1, L23

“one of the best limit of CLFV searches”

It is not clear what “the best” means. (At least, ‘limit’ should be ‘limits’.)

Section 2.1, L2

“COMET (...) has been” → “COMET (...), has been”

Section 2.1, L3

The information of the proton energy should be also described.

Section 2.1, L6-7

“Nuclear and Particle Experimental Hall (NP Hall)”

The official name of the place is “Hadron Experimental Facility”, isn’t it?

Section 2.1, L9-10

“The muon beam section ...”

Doesn’t it include the transport solenoid?

Section 2.1, L10

“muon stopping targets”

→ “a muon stopping target” (Maybe it consists of multi-layers.)

Section 2.2, Sentence 1

The part that explains the collaboration (“which has ...”) should be separated and moved to previous section.

Section 2.2, L5

“comparable to the Mu2e project”

→ “competitive with the Mu2e project”

or “comparable to that of the Mu2e project”

Section 2.2, L12

“In order to realized” → “In order to realize”

Section 2.2, L13

“and electromagnetic calorimeter” → “and an electromagnetic calorimeter”

Section 3.1, L3

“Design of radiation shielding and pion production target”

→ “Design of the radiation shielding and the pion production target”

Section 3.2.1, L3

“simulation study” → “simulation studies”?

Section 3.2.1, L5

“One designing issue with the CDC is”

→ “One designing issue with the CDC is that”

Section 3.2.2, L3

“would be completed” → “will be completed”

Section 3.2.3, Sentence 1

It is better to add a role in Phase-I, too. For instance, just adding “as well as for the background study in Phase-I” in the last may be sufficient.

Section 3.2.3, L4

“would be made” → “will be made”

Section 3.3, L1

“software” → “A software” (or “A set of softwares”?)

Section 3.3, L3

“an improved simulation”

It is better to have one or a few concrete examples.

Section 4, the last sentence

The structure of the sentence is not easy to understand. It is recommended to divide it into two, simple sentences.