

# “Experimental Searches for Muon to Electron Conversion in a Nucleus: COMET, DeeMe and Mu2e: A Contributed Paper for Snowmass 2022”

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On behalf of M.J. Lee, S. Middleton, Y. Seiya, and C. Wu  
CLFV Discussion Meeting  
December 9th 2021

# Introduction

- Paper summarizes several LOIs which discussed near future  $\mu N \rightarrow e N$  searches and related processes including:
  - S. Middleton et al: (Mu2e)
  - Y. Kuno et al: (COMET)
  - Y. Seiya et al: (DeeMe)
  - C. Wu : ( $\mu \rightarrow e A$ )
- We have had a few meetings and written  $\sim 10$  pages including details on COMET, Mu2e and an Introductory section.
- We expect to have another meeting before the new year and as many as needed after with aim to be complete by mid-Feb 2022.

# Outline of Paper and Status

Anticipated outline of the paper:

1. Introduction:
  - a. CLFV in the SM, BSM theories, motivations, some theoretical discussion (basic), experimental overview (includes description of  $R_{\mu e}$ , signal, common backgrounds etc.)
  - b. Additional physics processes
2. DeeMe:
  - a. Description of experiment and expected timeline/status
3. COMET:
  - a. Description of experiment and expected timeline/status
4. Mu2e:
  - a. Description of experiment and expected timeline/status
5. Summary/Outlook/Acknowledgements etc.

Key: In progress, First draft completed