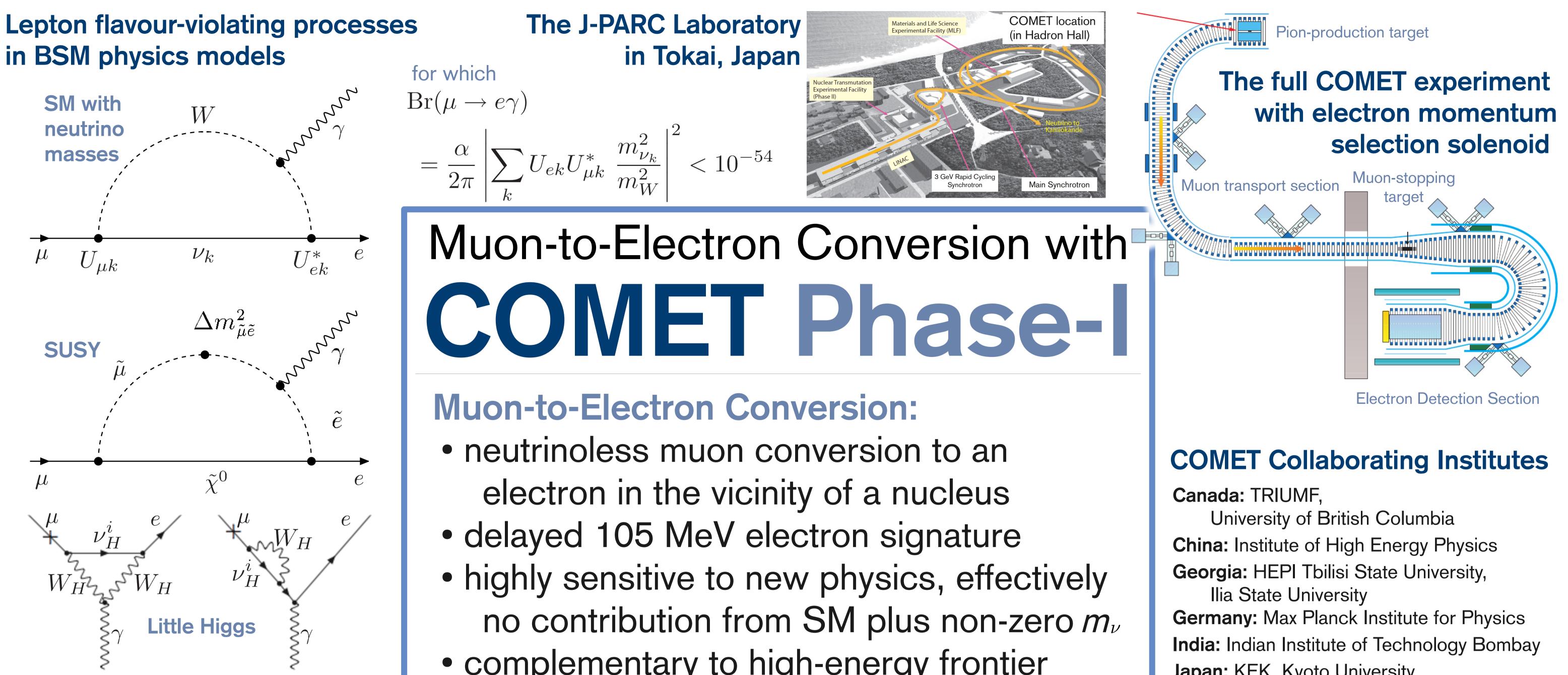
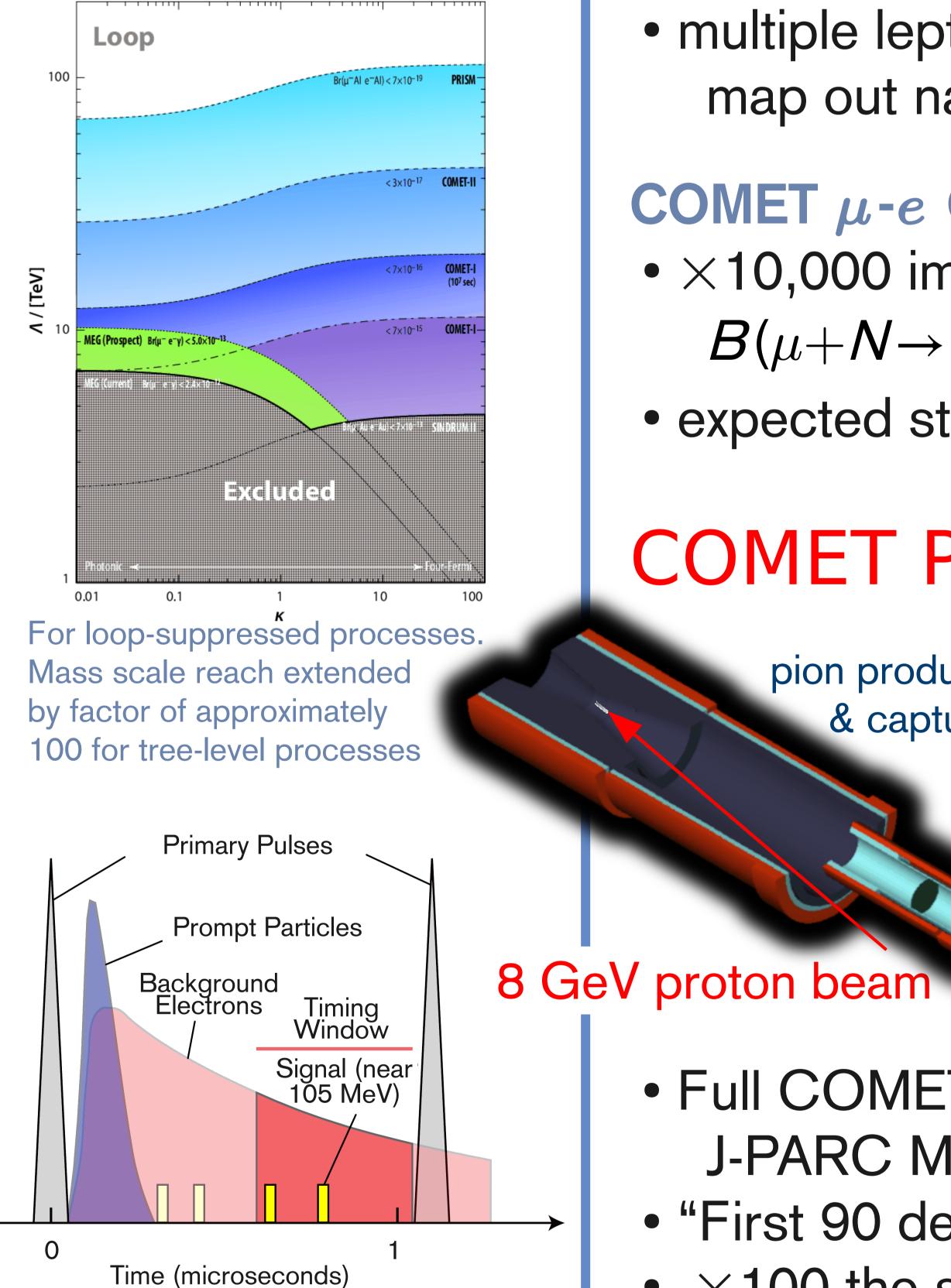
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Yoshi Uchida for the COMET Collaboration



Exclusion contours from muonic flavour-violating processes



- complementary to high-energy frontier
- target nucleus Z dependence probes nature of Beyond-the-SM interaction multiple lepton flavour-violating results will map out nature of new physics

COMET μ -e Conversion Experiment

• \times 10,000 improvement to current limit, to $B(\mu + N \rightarrow e + N) < 10^{-16}$, for Aluminium

Japan: KEK, Kyoto University, Osaka University, Saitama University Malaysia: University of Malaya, University Technology Malaysia Russia: BINP, ITEP, JINR **UK:** Imperial College London, University College London, University of Manchester, University of Oxford **USA:** Brookhaven National Laboratory Vietnam: Institute for Nuclear Science and Technology, National Vietnam University



expected start of data-taking: 2021

COMET Phase-I:

pion production target & capture solenoid

> charge/momentum selection

> > u-beam

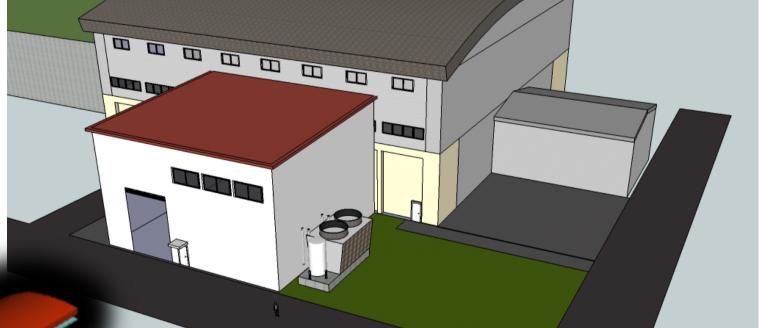
muon stopping target

& muon-to-electron

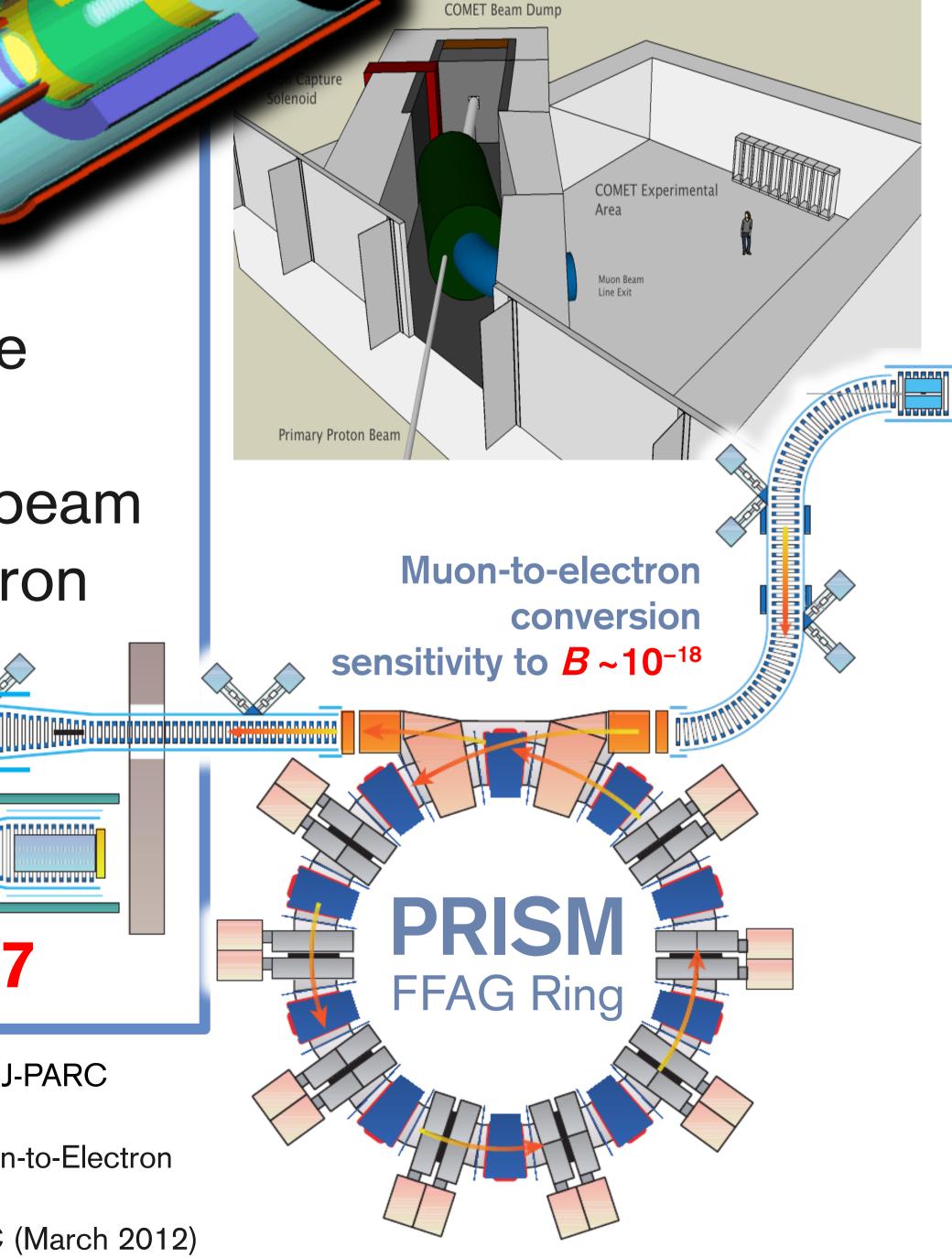
conversion

detector

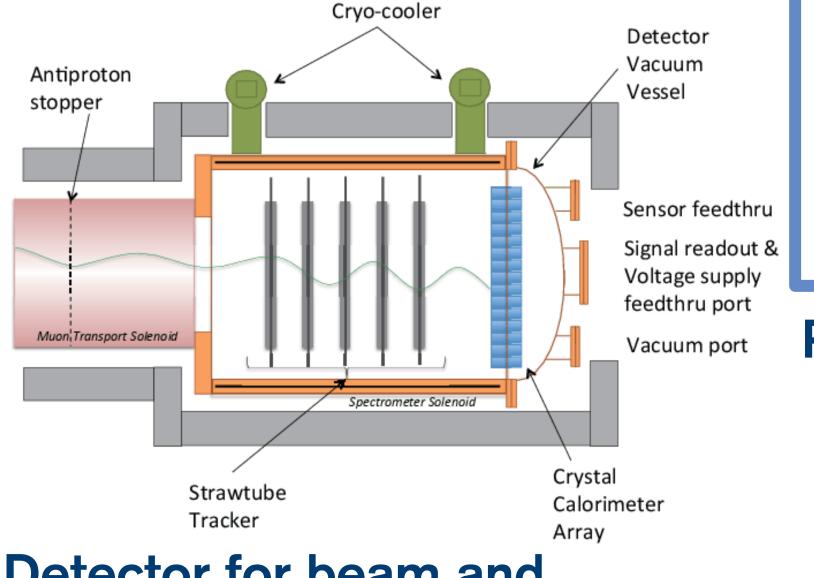
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Conceptual Designs for the COMET experimental hall at J-PARC



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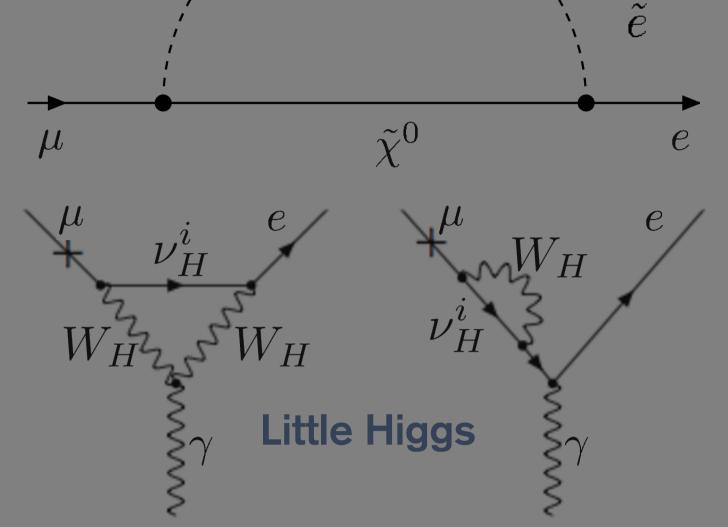
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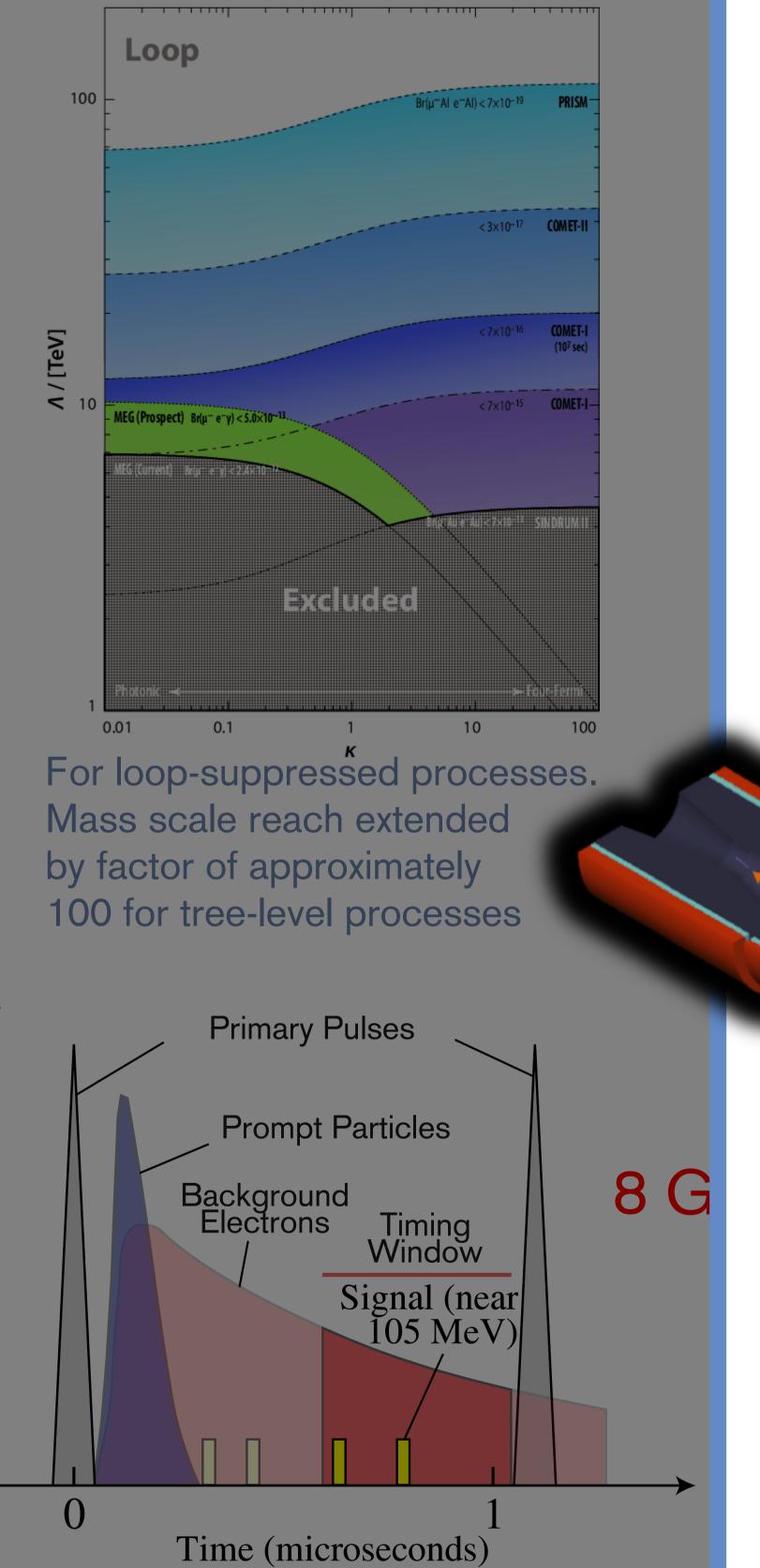
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Lepton flavour-violating processes **The J-PARC Laboratory COMET** locatio Pion-production target (in Hadron Hall) in BSM physics models in Tokai, Japan for which The full COMET experiment $\operatorname{Br}(\mu \to e\gamma)$ SM with with electron momentum neutrino $= \frac{\alpha}{2\pi} \left| \sum U_{ek} U_{\mu k}^* \frac{m_{\nu_k}^2}{m_{\mu k}^2} \right|^2 < 10^{-54}$ selection solenoid masses Muon-stopping GeV Rapid Cycli Muon transport section Muon-to-Electron Conversion with U_{ek}^* e u_k μ $U_{\mu k}$ **COMET Phase-I** $\Delta m^2_{ ilde{\mu} ilde{e}}$ **SUSY Electron Detection Section Muon-to-Electron Conversion:**



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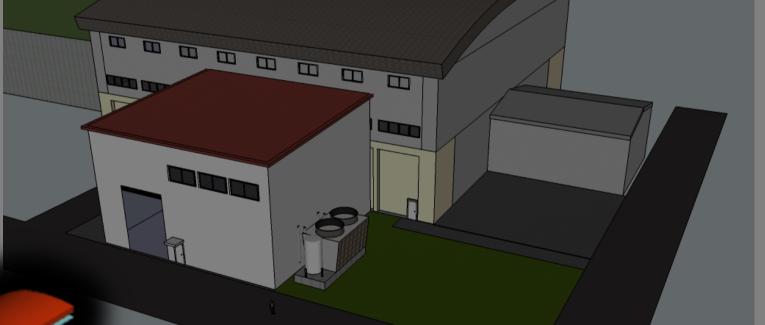
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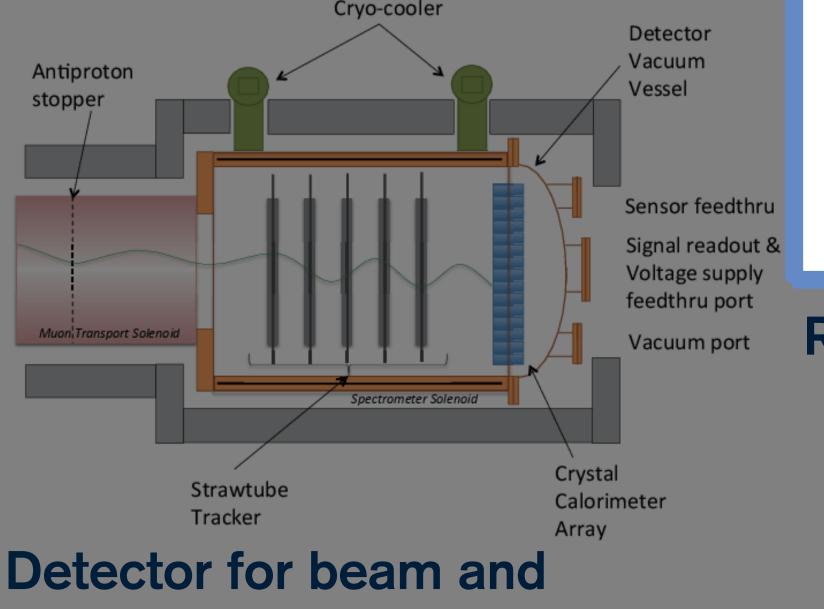
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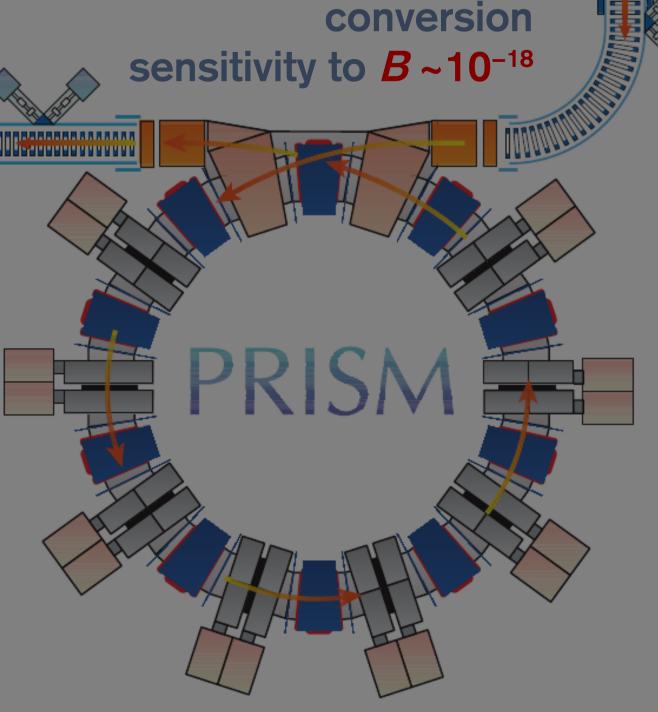
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experiment PRISM

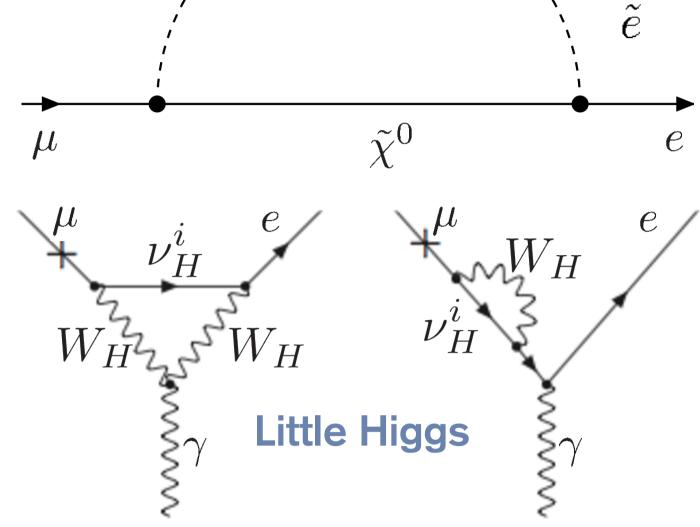
Muon-to-electron

Imperial College London

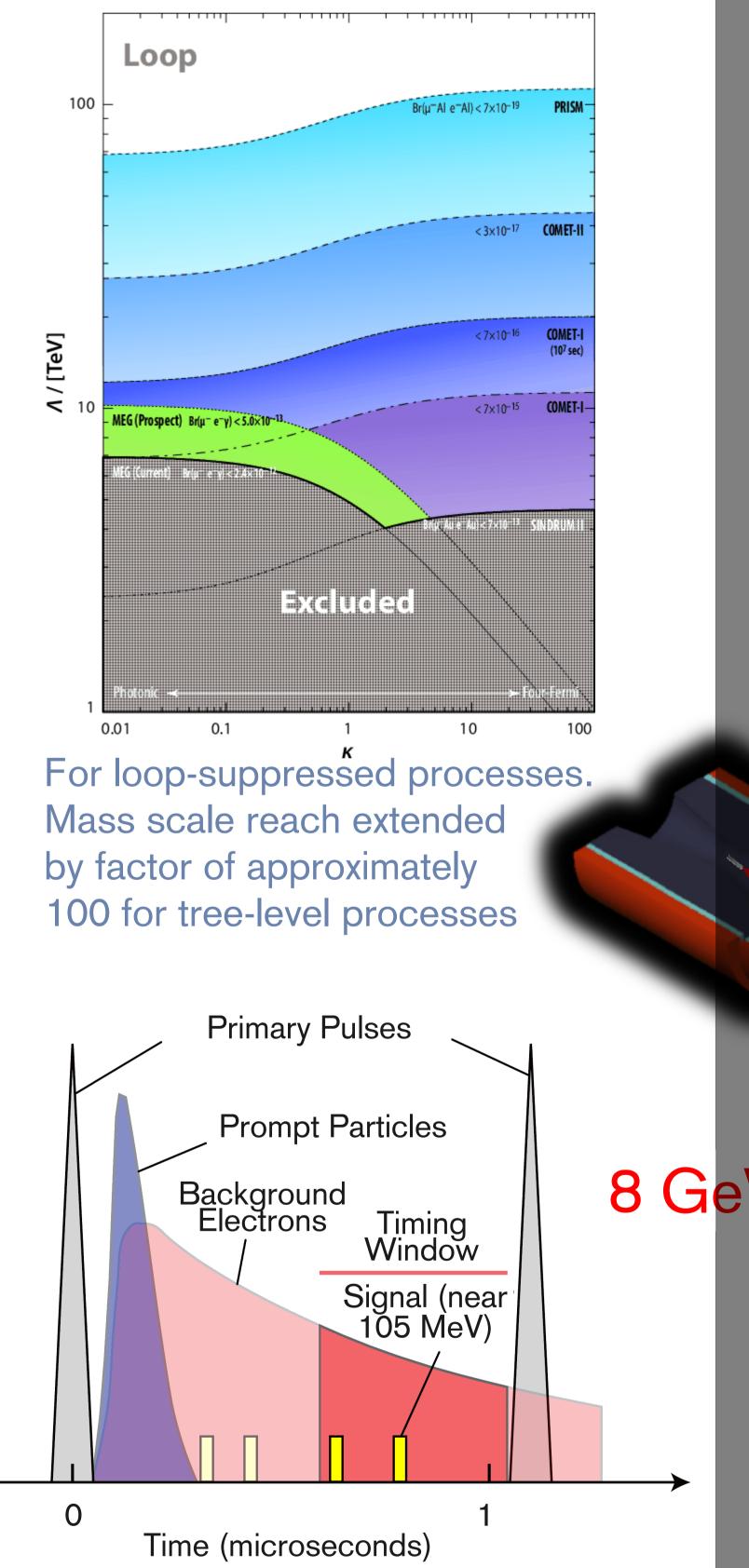
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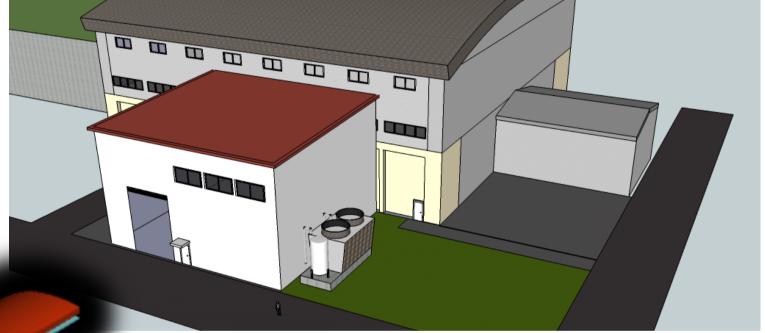
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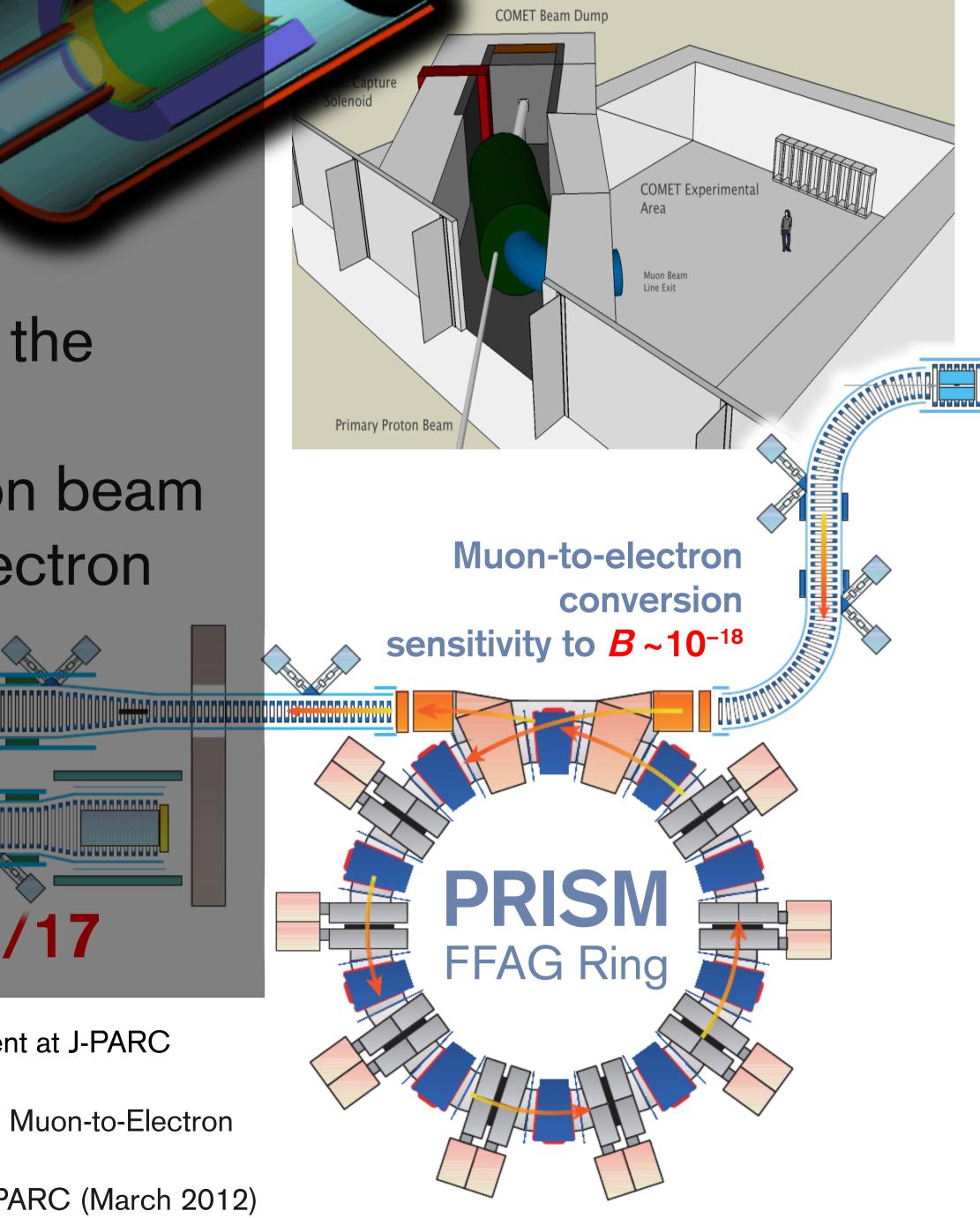
detector

beam 8 GeV proton beam

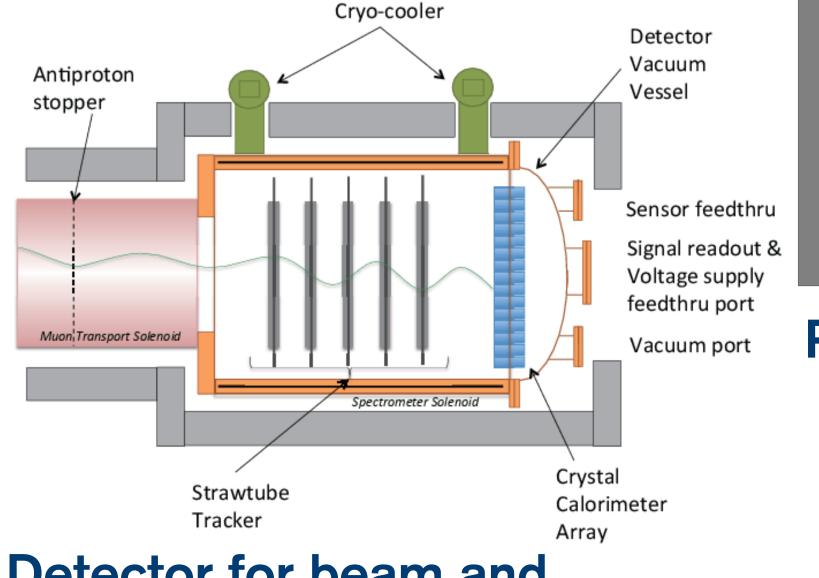
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