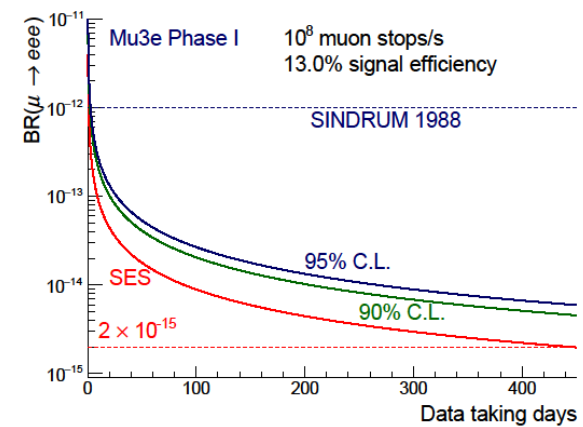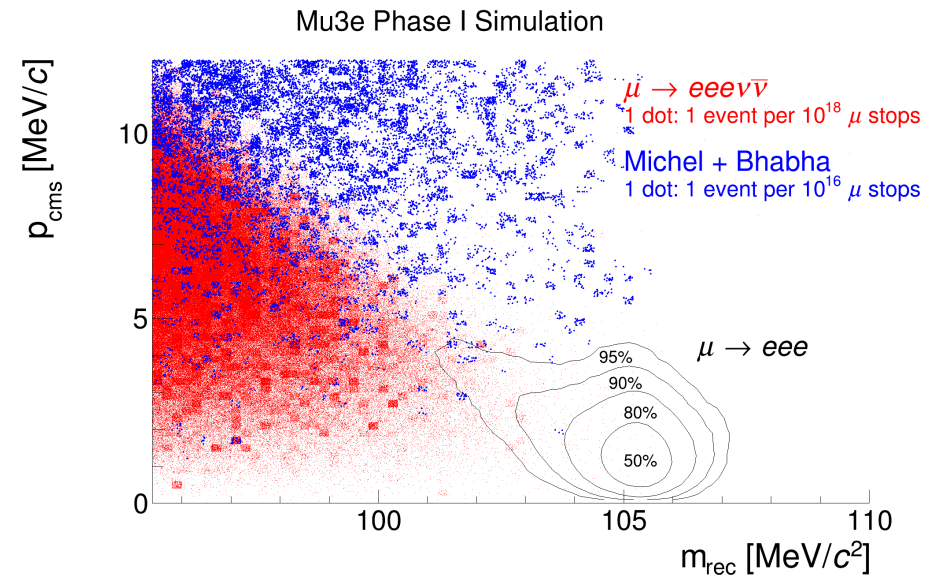# Mu3e Analysis Activities

- Geant4 based simulation and reconstruction chain running

- Full analyis performed on simulated data: Sensitivity study for $\mu^+ \to e^+e^-e^+$

- Studies for other channels such as $\mu^+ \to e^+X$ and e^+e^- resonance searches ongoing

Mu3e Phase I Simulation

$\mu \to eee\nu\bar{\nu}$
1 dot: 1 event per 10^{18} μ stops

Michel + Bhabha
1 dot: 1 event per 10^{16} μ stops

$\mu \to eee$

95%
90%
80%
50%

p_{cms} [MeV/c]

m_{rec} [MeV/c^2]

Mu3e Phase I 10^8 muon stops/s
13.0% signal efficiency

SINDRUM 1988

95% C.L.

90% C.L.

SES

2×10^{-15}

BR($\mu \to eee$)

Data taking days

Mu3e Online Analysis

- Mu3e has a streaming DAQ and a GPU-based filter farm

- Development and testing of on-line filter algorithms

- Verification of DAQ functionality (Bit-for-bit simulation)

- Preparation of real-time calibrations

- Histogram-based analysis on GPUs ($\mu^+ \rightarrow e^+ X$)