Title:	Constraining the NuMI neutrino flux using inverse muon decay reactions in MINERvA
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Abstract:	Inverse muon decay, $\nu_\mu e^- \rightarrow \mu^- \nu_e$, is a reaction whose cross section can be predicted with very small uncertainties. It has a neutrino energy threshold of ≈ 11 GeV and can be used to constrain the high-energy part of the flux in the NuMI neutrino beam. This reaction is the dominant source of events which only contain high-energy muons nearly parallel to the direction of the neutrino beam. We have isolated a sample of hundreds of such events in neutrino and antineutrino enhanced beams, and have constrained the predicted high-energy flux.
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