Title:	Constraint of the MINER v A medium energy neutrino flux using neutrino-electron elastic scattering
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Abstract:	Elastic neutrino scattering on electrons is a precisely known purely leptonic process that provides a standard candle for measuring neutrino flux in conventional neutrino beams. Using a total sample of 810 neutrino-electron scatters after background subtraction, the measurement reduces the normalization uncertainty on the v μ NuMI beam flux between 2 and 20 GeV from 7.6 to 3.9%. This is the most precise measurement of neutrino-electron scattering to date, will reduce uncertainties on MINER v A's absolute cross section measurements, and demonstrates a technique that can be used in future neutrino beams such as long baseline neutrino facility.
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