



ID de Contribution: 135

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## First Measurement of Monoenergetic Muon Neutrino Charged Current Interactions

*jeudi 15 mars 2018 09:10 (15 minutes)*

We report the first measurement of monoenergetic muon neutrino charged current interactions. MiniBooNE has isolated 236 MeV muon neutrino events originating from charged kaon decay at rest ( $K^+ \rightarrow \mu + \nu_\mu$ ) at the NuMI beamline absorber. These signal  $\mu$ -carbon events are distinguished from primarily pion decay in flight and backgrounds produced at the target station and decay pipe using their arrival time and reconstructed muon energy. The significance of the signal observation is at the  $3.9\sigma$  level. The muon kinetic energy, neutrino-nucleus energy transfer ( $\omega = E_\mu - E_\nu$ ), and total cross section for these events is extracted. This result is the first known-energy, weak-interaction-only probe of the nucleus to yield a measurement of  $\omega$  using neutrinos, a quantity thus far only accessible through electron scattering.

### Summary

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**Classification de Session:** Thursday morning: Neutrinos