



Normalization of the neutron monitor response to cosmic rays using AMS-02 measurements

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A network of ground-based neutron monitors (NMs) is the main tool to study cosmic ray variability on long-term scales. However, still there is a systematic uncertainty related to the yield function of a NM to cosmic ray variability, as several presently used yield functions offer different results. Until recently, it was hardly possible to directly verify and validate the NM yield functions, but the new measurements of cosmic ray spectra by AMS-02 experiment give, for the first time, such a possibility. Here we present a detailed analysis of the NM data and AMS02-base spectra for the period May 2011 through May 2017, and validate the existing yield functions. We show that the yield function by Mishev et al. (2013) provides the results which yields the best agreement with data. We also provide a new way to parameterize contribution of heavier cosmic ray species (helium to iron) to NM count rate.