

Comments on the median rigidity of response of a neutron monitor for galactic cosmic ray modulation studies

H.S. Ahluwalia and M.M. Fikani

University of New Mexico, Department of Physics and Astronomy, Albuquerque, NM 87131, USA (hsa@unm.edu)

Modulations of galactic cosmic ray (GCR) intensity, on all time scales, contain a wealth of information regarding their modes of transport in the heliosphere. One way to extract crucial information from the data is to study the rigidity dependence of modulation effects. We do this using data obtained with detectors on ground as well as underground, at mountain altitudes, on balloons, satellites and space probes. For these studies, it is important to have a clear understanding of the response characteristics of detectors providing data for the analyses. There is a great deal of confusion about neutron monitor (NM) response in the literature. We define median rigidity of response (R_m) as the GCR rigidity below which lies 50 % of the detector counting rate. For NMs, it is easily calculated from the latitude survey data, obtained at sea level and at higher altitudes. We list computed R_m values for some observing sites of the global network of NMs; solar cycle dependence for them is shown to be small. Physical significance of our results is discussed.