

A Mobile Neutron Monitor to Intercalibrate the Worldwide Network

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With the commercial availability of high efficiency ^3He counters it has become possible to construct a mobile neutron monitor that will count 10^{*6} particles, i.e. with 0.1% counting statistics, in less than 24 days (at sea level at the highest cutoff rigidities). Such a monitor will have dimensions not exceeding 40x40x70 cm, and its mass will be about 220 kg. This implies that it can be physically handled and put next to individual neutron monitors in the world-wide neutron monitor network to intercalibrate them, and to derive differential intensity spectra (differential response functions) from them. This spectral information will make neutron monitors much more useful cosmic ray detectors. In this contribution we describe the physical and electronic design of this calibrator, simulations of its counting rate, and our first plans to calibrate it against an NM64 neutron monitor on an Antarctic voyage by the Bartol Research Institute, the University of Tasmania and the Australian Antarctic Division in November/December 2001.