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The mini neutron monitor programme

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Two small neutron monitors were built in 2002 to intercalibrate the approximately 40 stationary neutron monitors around the world, in order to study the modulation of cosmic rays derived from the resulting differential response functions. Due to electronic development during the past decade, the electronics heads were redesigned in 2011 and due to cheaper and more efficient counter tubes, the vision broadened to the concept of a mini neutron monitor, i.e. a permanent detector in its own right. Such instruments can attain counting rates similar to those of standard neutron monitors if they are placed at mountain locations of > 3 000 m. Currently, three such high-altitude mini neutron monitor are operational. One operates at sea level, and one is used on the research vessel Polarstern to measure the instrument's latitude response, from which its rigidity response can be calculated. Progress with these instruments is reported elsewhere in the conference.
This contribution describes the newest versions of the mini neutron monitors, i.e., the various counter tubes that are available commercially, different configurations of lead producers, and it investigates how a more efficient second-generation network of neutron monitors can be deployed at high-altitude locations in existing buildings, using their already-installed infrastructure.

Collaboration

– not specified –

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