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Background analysis in radionutrino experiments

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Astrophysical radio experiments in Antarctica and Greenland are designed to search for neutrinos with ultra high energies. The method of their detection is based on the search for Askaryan radio pulses emitted by showers from the interaction of neutrinos in ice. For these experiments, it is important to know what pulsed radio noise may be present in order to distinguish them from rare neutrino events. And it is also important to understand what contributes to the constant radio background, because the energy threshold and the effective volume of the detectors depend on the noise level. Also a detailed study of the radio noise and its nature may allow checking the calibration of the system. The paper presents the results of studying the sources of radio noise in experiments at the South Pole. The influence of anthropogenic activity and periods of strong storms was determined using the data of the AURA experiment. The contribution of galactic noise, thermal noise from ice, and electronic noise to the radio background level is analyzed using the data of the RNO-G experiment in Greenland.

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