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Detecting Ultra High Energy Neutrinos with LOFAR

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When an ultra-high energy (UHE) neutrino hits the Moon, it initiates a hadronic cascade below the surface. The cascade has a negative charge excess that propagates faster than the local speed of light, producing a short pulse of radio Cherenkov emission. The NuMoon project aims to detect these lunar radio pulses on Earth with low frequency radio telescopes.

The Low Frequency Radio Array (LOFAR) is a large radiotelescope, with its core in the northern part of the Netherlands, that is currently being build. We are preparing to perform the lunar neutrino measurement with LOFAR. The expected sensitivity of LOFAR reaches flux limits within the range of some theoretical production models. I will discuss the challenges of detecting UHE neutrinos with LOFAR.

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Classification de Session: From radioastronomy to high energy particles