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NuMoon: Status of ultra high energy particle searches with LOFAR

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The lunar askaryan technique is one of the few ways to obtain a large enough collecting area to detect ultra high energy cosmic rays and neutrinos at the highest end of the spectrum, above 10^{21} eV. The flux of these particles is unknown, but if they are found they either point back to the best cosmic accelerators or may be the products of the decay of exotic particles and a step towards dark matter identification. The large collecting area is especially true for frequencies between 100-200 MHz, where the radiation is spread out over a wider angle and thus more of the lunar surface can be used for a possible detection. The NuMoon project therefore observes the Moon at these frequencies to search for nanosecond pulses. A first project with the Westerbork Synthesis Radio Telescope has placed the most stringent upper limits on the flux of ultra high energy cosmic rays and neutrinos. The next step is to observe with LOFAR, currently the most sensitive low frequency telescope. In this contribution I will present the status and plans of the project.

Collaboration

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