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An idea to measure the arrival direction of wavy dark matter using the Moon

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Identifying the arrival direction of wavy dark matter is important after finding a signal of it. In particular, dish antenna experiments aim to detect sharp radio signals converted from dark photon or axion at the boundary of the electromagnetic field, e.g., metal plate converter. We expect to understand the mass and coupling constants of the wavy dark matter when we find the conversion radio signal. To identify the arrival direction of the wavy dark matter, the receiver system has to achieve fine angular resolution, $\ll 0.1^\circ$. Thus, we need a huge aperture (~ 100 m) telescope or similar distant interferometer, such as the ALMA telescope. In addition, we have to set the converter far away from the receiver, $> 1,000$ km, which must be outside of the Earth. The Moon is one of the candidate places to set the converters. Distributing the converters in the radius of ~ 2 km on the Moon, and identifying the location of the conversion signal gives us knowledge about the arrival direction of the wavy dark matter to the Moon. The revolution of the Moon also modulates the location of the conversion. We will present this idea as well as discussions related to it.

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