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Energy-efficient Bessel beams

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Due to their novel properties, Bessel beams have found interesting applications in the fields of metrology, imaging, non-linear optics, micromanipulation, atom guiding and beam shaping for coronagraphs. Their main drawback is in energy losses encountered during propagation, which therefore can limit their usage for long distance applications. In this work, we investigate the energy efficiencies of the different holographic methods used to generate Bessel beams using a Spatial Light Modulator (SLM). These methods will range from using a single holographic mask to using multiple phase masks in order to spread the power over the whole SLM. We will also outline the possible application of Bessel beams in sending pulsed lasers to retroreflectors to the Moon with the aim of accurately determining the Earth-Moon distance; a technique referred to as Lunar Laser Ranging

Apply to be considered for a student award (Yes / No)?

Yes

Level for award (Hons, MSc, PhD, N/A)?

PhD

Main supervisor (name and email) and his / her institution

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Would you like to submit a short paper for the Conference Proceedings (Yes / No)?

No

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