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Creating and Measuring 2 μm Light Using a Spatial Light Modulator

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**Abstract content
 (Max 300 words)
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It has been extensively shown that a Spatial Light Modulator (SLM) can create different shapes of light in the visible and near Infra red (IR). This requires proper calibration of the SLM to verify that for this wavelength, a phase shift from 0 to 2π occurs successfully over all the 256 grey-levels. The process is achieved by introducing a phase shift on one of the two interfering plane waves while the other is kept constant. The resulting shift of the interference pattern is directly proportional to the phase shift the beam experiences. We plan to demonstrate the SLM operation in the Mid IR region for the first time as this will prove useful for optical communications and defence applications. Here the SLM also needs to be calibrated so that it achieves a 0 to 2π phase shift. Furthermore, as in the visible region, we can develop for these applications, non diffractive 2 μm Bessel or Bessel like beams (BLB) and vortex beams which have several advantages. With an SLM we can generate and exploit the Bessel beams' strong diffraction resistance and self-healing properties.

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PhD

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

Dr. Hencharl Strauss

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Yes

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