Complex Lasers with Tunable Coherence

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Over the past sixty years, lasers have enabled major scientific and technological advancements, and have been exploited in numerous applications due to their advantages such as high brightness and high coherence. However, as an illumination source, the high spatial coherence of a laser is not always desirable, as it can cause adverse artifacts such as speckle noise in imaging applications. We have developed novel lasers to tune the spatial coherence of laser emission for speckle-free imaging and holography. By switching the laser coherence, we have realized bimodal imaging for biomedical application.

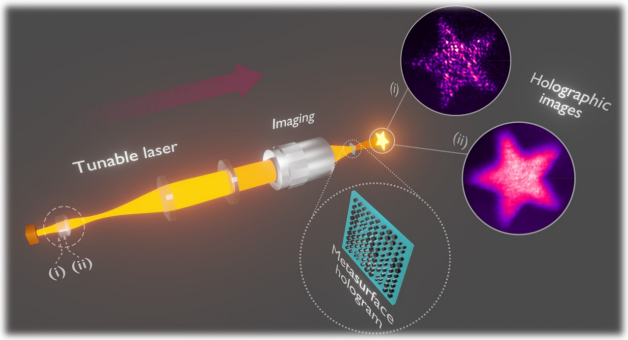

Figure 1: Suppressing meta-holographic artifacts by tuning spatial coherence of a laser