

SAIP2014



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Generation of Coherent and Incoherent Superpositions of Laguerre–Gaussian Beams using a Diode-Pumped Solid-State Digital Laser

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Abstract :

In this paper we demonstrate experimentally the methods of intra-cavity generating superposition of Laguerre–Gaussian modes of zero radial order but opposite azimuthal order. The superpositions are created with a simple technique such as intra-cavity loss lines, multi-rings and circular apertures which are implemented on digital laser using a phase-only spatial light modulator. We show that we can produce very pure coherent superposition of petal modes of up to azimuthal order 25 and also incoherent superposition of petal modes that form a doughnut that do not carry any orbital angular momentum (AOM). We further demonstrate a technique that could be used to distinguishing between an incoherent doughnut mode from a coherent doughnut mode that does not carries OAM.

Award :

Yes

Level :

Phd

Supervisor :

Prof. Andrew Forbes CSIR-NLC

Paper :

No

Primary authors : Mr. NGCOBO, Sandile (CSIR)

Co-authors : Mr. NAIDOO, Darryl (CSIR) ; Dr. LITVIN, Igor (CSIR) ; Prof. FORBES, Andrew (CSIR)

Presenter : Mr. NGCOBO, Sandile (CSIR)

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