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Studying quantum-like light from simple laser systems

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In the extremes of quantum and classical states of light we find quantum-like light, coherent states that look like particles but behave like waves. Here we present a novel laser that exhibits quantum (wave) and ray (particle) like features. We build the laser cavity using simple linear optical elements and show that the relation between the cavity length(L) and radius of curvature(R) when precisely controlled determines different periodic oscillating ray trajectories in the cavity with different longitudinal frequency modes. We also exploit the use of an off-axis pump laser diode to pump different positions of the crystal attached to the flat mirror to generate arbitrary oscillating ray patterns in the stable plano-concave resonator to illustrate the concept of ray-wave duality.

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

Yes

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

MSc

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