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Tuneable Gaussian to flat-top resonator by amplitude beam shaping

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Abstract

We outline a simple laser cavity comprising an opaque ring and a circular aperture that is capable of producing spatially tuneable laser modes, from a Gaussian beam to a Flat-top beam. The tuneability is achieved by varying the diameter of the aperture and thus requires no realignment of the cavity. We demonstrate this principle using a digital laser with an intracavity spatial light modulator, and confirm the predicted properties of the resonator experimentally.