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Decomposition of the field within an apertured plano-concave resonator

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A method of experimentally decomposing a field within an apertured plano-concave resonator cavity into a forward propagating field (plane to concave) and a backward propagating field (concave to plane) is presented. The use of an intra-cavity aperture which is a simple method of laser beam shaping is a means of mode selection as higher-order modes are actively discriminated. This apertured cavity is modelled by two fundamental resonator theories, namely, Fox-Li analysis and Laguerre-Gaussian decomposition where they are used in the determination of the respective beam profiles at a specific plane. These theories traditionally differ from one another for an apertured cavity where the Gaussian beam within the cavity is truncated. A preliminary set-up is characterized for Gaussian propagation in an attempt to verify that the cavity is viable and accurate. A comparison of experimental data with the theories is presented.

**Level (Hons, MSc,
 PhD, other)?**

MSc

**Consider for a student
 award (Yes / No)?**

Yes

**Would you like to
 submit a short paper
 for the Conference
 Proceedings (Yes / No)?**

No

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