Power scaling of enhancement cavities for nonlinear optics

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Abstrak

This thesis covers central problems of enhancement cavities, such as finding limitations in scaling the circulating power, measuring cavity parameters with high accuracy, tailoring transverse modes and coupling out radiation generated in the cavity. Unprecedented intracavity laser powers were demonstrated, surpassing previous results by an order of magnitude. As an application, harmonics of the fundamental 1040-nm radiation up to the 21st order are generated. Besides reporting these fine experimental results, the thesis provides an excellent introduction into the physics of enhancement cavities, supported by more than 140 references.