MODE ANALYSIS AND MIRROR DISTORTIONS IN HIGH POWER OSCILLATOR FELS

J. Blau, W.B. Colson, A. Kampouridis, R. Vigil, NPS, Monterey, California

Abstract

The modal composition of FEL optical beams are quantified using Hermitel-lGaussian modes for the basis set. A software tool is developed to analyze an arbitrary optical wavefront, and is now incorporated into FEL simulations. The simulations are used to study the effects of mirror distortions, such as astigmatism, in highl-lpower oscillator FELs. We look at the effects of various types of mirror distortions on FEL gain, saturated power, and beam quality.

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