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**Numerical simulations of the focal spot generated by a set of laser beams: LMJ.** (English)

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Summary: In order to get the fusion of small capsules containing a deuterium-tritium nuclear fuel, the MegaJoule laser (LMJ) will focus a large number of laser beams inside a cylinder (Hohlraum) which contains the fusion capsule. In order to control this process we have to know as well as possible the electromagnetic field created by the laser beams on both Hohlraum's apertures. This article describes a numerical tool which computes this electromagnetic field from the definition of the laser beams in front of the focusing gratings. Despite its apparent simplicity, this computation necessitates a two step plane wave decomposition and the size of the data requires the use of a parallel strategy with a large number of processors.

**MSC:**

78M25 Numerical methods in optics (MSC2010)

78A60 Lasers, masers, optical bistability, nonlinear optics

**Software:**

FFTW

**Full Text:** [DOI](#)