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Simulations of SASE-initiated short wavelength FEL's on multiprocessor hardware with the GINGER code

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Simulations of SASE-initiated short wavelength FEL's on multiprocessor hardware with the GINGER code¹ WILLIAM M. FAWLEY, LBNL — GINGER is a polychromatic, 2D ($r-z$) particle-in-cell simulation code originally developed in the 1980's to study side-band growth in FEL amplifiers. In the last decade, numerous simulations with GINGER have been performed to examine various aspects of SASE-initiated x-ray and XUV FEL's, such as those proposed by LCLS collaboration and TESLA FEL at DESY. Recently, GINGER's source code has been substantially updated to exploit many modern features of the Fortran90 language and the code now runs on a variety of platforms ranging from single processor workstations in serial mode to both SMP (*e.g.* Cray J90) and MPP (*e.g.* NERSC Cray T3E) hardware in full parallel mode. This talk discusses some of the structural details of GINGER which permitted relatively painless porting to parallel architectures. Examples of some recent SASE FEL modeling with GINGER will be given as well as a summary of additional code improvements to obtain more accurate modeling of experimental configurations.

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Prefer Oral Session
 Prefer Poster Session

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Special instructions: please put this talk into the minisymposium on Theory and Simulation of High Gain Free-Electron Lasers being organized by Ming Xie

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