

# PhotonMEADOW 2023

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## A New Ray Trace Computer Program For Radiation Safety

*Thursday, September 14, 2023 10:10 AM (20 minutes)*

A new computer program has been created to assist in radiation safety ray trace operation for Linac Coherent Light Source (LCLS) at SLAC National Accelerator Laboratory. In contrast to historical method which has been performed manually using drafting tools on CAD softwares, the computer-based calculation propagate the illumination boundaries automatically and accurately using phase space method. This method differs from ray-based sampling method available in most commercial ray tracing packages and avoids the risk of under-sampling.

With a native graphical user interface, the program is easy to operate and allows for near real-time feedback on placements and motional ranges of components with regard to beam containment. By replacing manual construction of ray trace drawings, significant time saving is achieved (from week to second) and potential human errors avoided. Such reduction in overhead also allows beam line safety considerations to enter early in the design iterations and potentially avoid engineering effort for costly modifications later on.

### Journal of Synchrotron Radiation Special Issue: will you submit your contribution?

no

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