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**A Smoother Ray-Traced Power Deposition Method**[1] ANDREW SCHMITT, JASON W. BATES, Plasma Physics Division, Naval Research Laboratory, Washington DC, DAVID EIMERL, Eimex Software and Consulting, Livermore CA — We have developed a new approach to improve the smoothness of the power deposition produced by ray-tracing laser light in plasmas. The fundamental approach is to connect the traced-rays together into either sheets (in 2D) or volume-enclosing chunks (in 3D). The connected rays then sweep out areas or volumes on the underlying mesh onto which power is deposited. The resulting absorbed power distribution continuously and smoothly covers the region illuminated by the laser. This approach allows significantly less rays to be used in the ray-tracing, and reduces the message passing in the parallelized implementation. The number of rays is also independent of grid resolution. Previously we have shown results from the 2D connection method; here we show the 3D connection method and discuss its implementation in our massively parallel radiation hydrodynamics code FASTRAD3D.

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