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Lowering the risk of stimulated Brillouin backscatter from NIF hohlraums by re-pointing beams[1] RICHARD BERGER, K.L. BAKER, C.A. THOMAS, J.L. MILOVICH, A.B. LANGDON, D.J. STROZZI, M. MICHEL, Lawrence Livermore Natl Lab — The 64 beams that make a 50 degree angle with the hohlraum axis have been measured to reflect by Stimulated Brillouin Backscatter (SBS) enough laser light to cause optical damage and limit design parameter space. The amount of backscatter has been seen to depend on the initial plasma density filling the hohlraum, the hohlraum wall material, and the laser pulse length. The most important parameter causing SBS is the laser intensity on the hohlraum wall. In previous hohlraum designs, the intensity of the 50 degree beams has been controlled by cross-beam energy transfer (CBET). [*P. Michel, et al. Phys. Rev. Lett.* **102** *025004 (2009)*] Recent designs with reduced CBET have experienced an increase in SBS. Here we show that repointing beams can reduce the laser intensity at the wall and still maintain good beam smoothing. The reduction in intensity is achieved by separating the 44 and 50 degree cones of beams along the hohlraum axis and then repointing beams within each cone to reduce overlap while preserving polarization smoothing. PF3D simulations show dramatic reductions of SBS are possible. Experiments will determine whether increased laser entrance hole sizes will be required and whether this technique will open up new design options.

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Richard Berger
Lawrence Livermore Natl Lab

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