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Application of a third laser wavelength option to optimize mega-joule laser hohlraum coupling on the National Ignition Facility¹ PIERRE MICHEL, LAURENT DIVOL, DEBRAH CALLAHAN, RICHARD TOWN, NATHAN MEEZAN, GAYLEN ERBERT, CHRISTOPHER HAYNAM, SIEGFRIED GLENZER, EDWARD MOSES, LLNL — A third laser wavelength option is currently under development on the NIF. The third oscillator will complement the existing two that seed the inner (at 23.5 and 30 degree from hohlraum axis) and outer (at 44.5 and 50 degree) cones of beams. By shifting the wavelength of the oscillators we have previously demonstrated control of energy transfer between the inner and outer cones of beams. The new third oscillator will be added to manipulate the power of the 23.5 degree cone of beams with the goal to redistribute the energy among the inner (23.5 and 30 degree) beams to reduce Stimulated Raman Scattering losses and achieve high coupling for hohlraum experiments that are driven with more than 1 MJ of energy. In this talk, we will focus on the physics of the energy transfer with three wavelengths, and show how the intrinsic nature of the plasma flow in a typical hohlraum target allows to exchange energy between the 23.5 and 30 degree cones with minimal impact on the outer cones - hence preserving radiation symmetry with the benefit of controlling the hohlraum internal laser beam intensities.

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