Shock-Timing Experiments in support of the National Ignition Campaign



T. R. Boehly University of Rochester Laboratory for Laser Energetics 48th Annual Meeting of the American Physical Society Division of Plasma Physics Philadelphia, PA 30 October–3 November 2006 **Summary**

OMEGA experiments indicate that optical diagnostics can be used to time shocks in ignition targets

- During measurement of the first three shocks T_{rad} = ~160 eV and I_{wall} = 100 TW/cm²; these fluxes can produce ionization blanking of the diagnostic window.
- Halfraum and open-geometry experiments indicate that shock-timing measurements can be performed at NIF-relevant conditions.
- Experiments with cryogenic cone targets in hohlraums (keyhole targets) will be used to demonstrate shock-timing measurements for ignition.





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At high fluences, ionization blanking in the window can compromise optical diagnosis of shock timing



"Warm" Experiments

Halfraum experiments exhibit a threshold in laser intensity for window blanking



Experiments above threshold show that blanking is a line-of-sight phenomena and that apertures help



Windows survived OMEGA halfraum experiments that replicated the NIF intensities for the third shock



E15113

Open line-of-sight targets are used to mimic the effect of NIF laser spots



Stacked-pulse experiments show that neither instantaneous nor integrated flux are expected to be problems



Summary/Conclusions

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