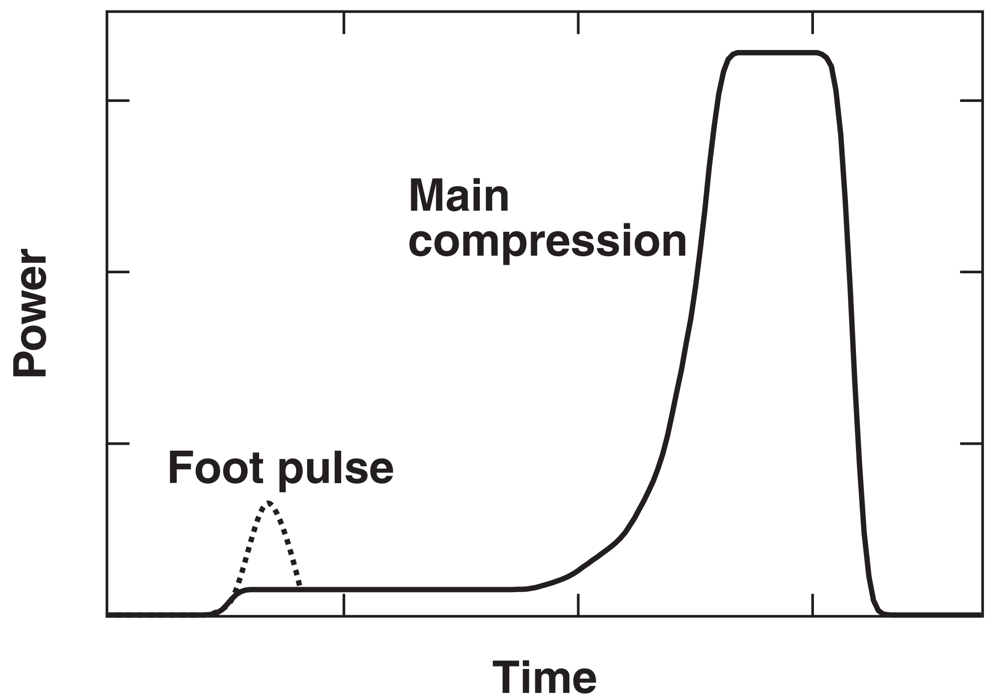
Direct Drive Shock-Timing Experiments Using Planar Targets



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Summary

Planar experiments provide measurements of shock propagation and timing for ICF target designs

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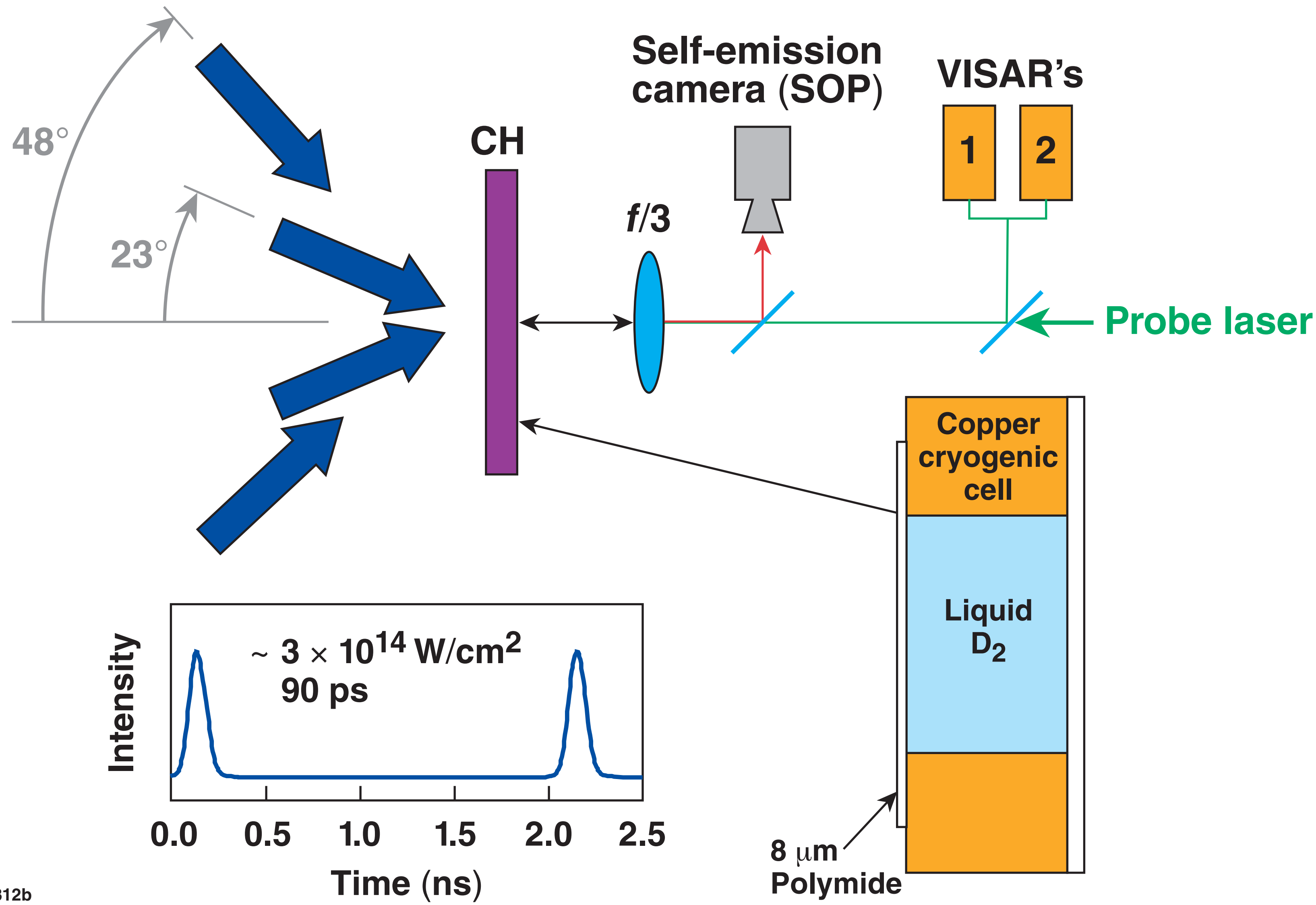
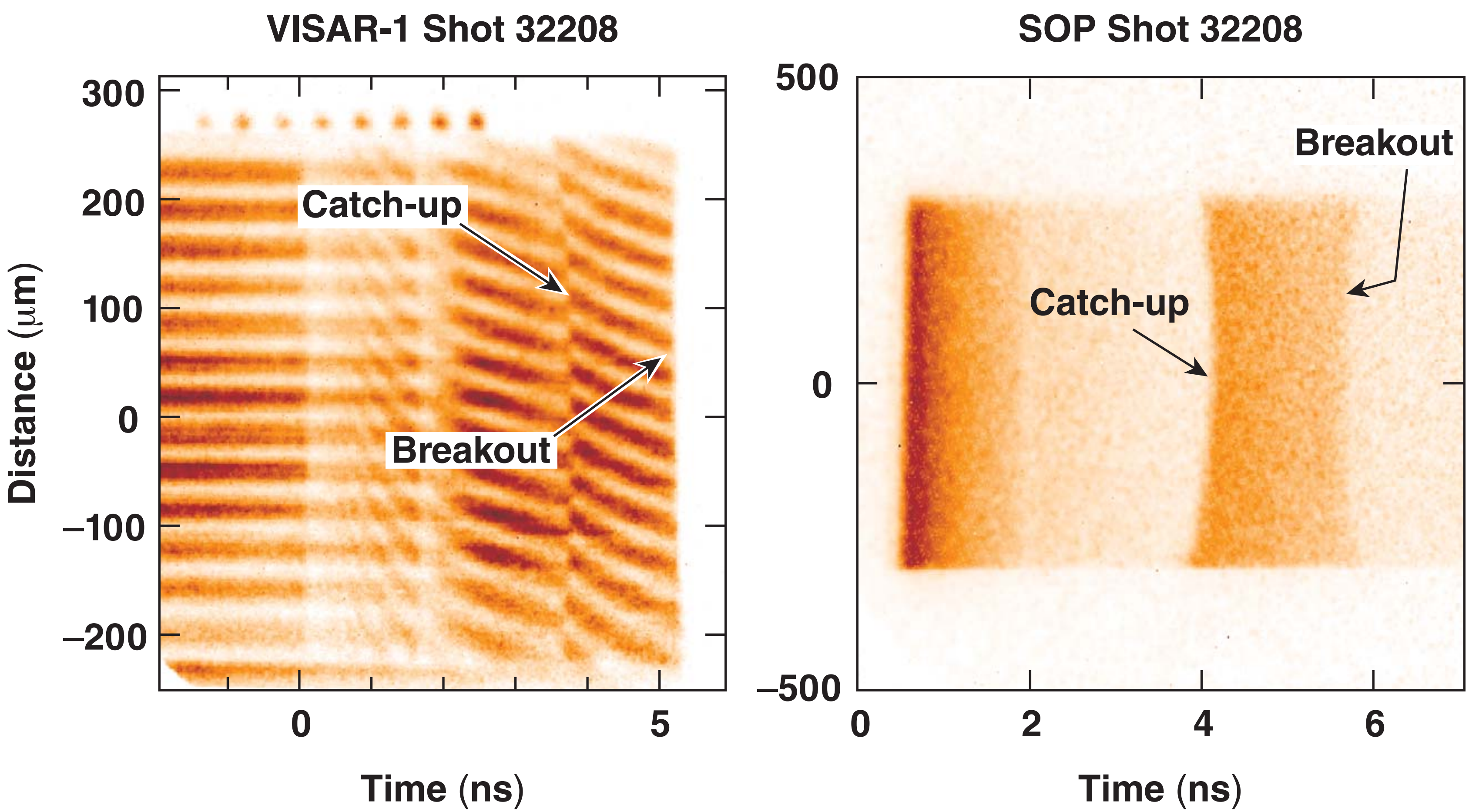
- Use planar experiments to study/time multiple shocks and to validate hydrodynamic simulations.
- Time-resolved velocity and self-emission profiles measure behavior and timing of multiple shocks in CH and cryogenic D_2 targets.
- 1-D simulations with ray tracing simulate double-pulse experiments in CH well.
- Self-emission provides shock-timing data even when VISAR is compromised.
- Shock velocities can be measured during the pulse using surrogate targets.

Shock velocity and self-emission in double-shock experiments are measured optically



E12812b

Simultaneous velocity and self-emission profiles provide corroborative data



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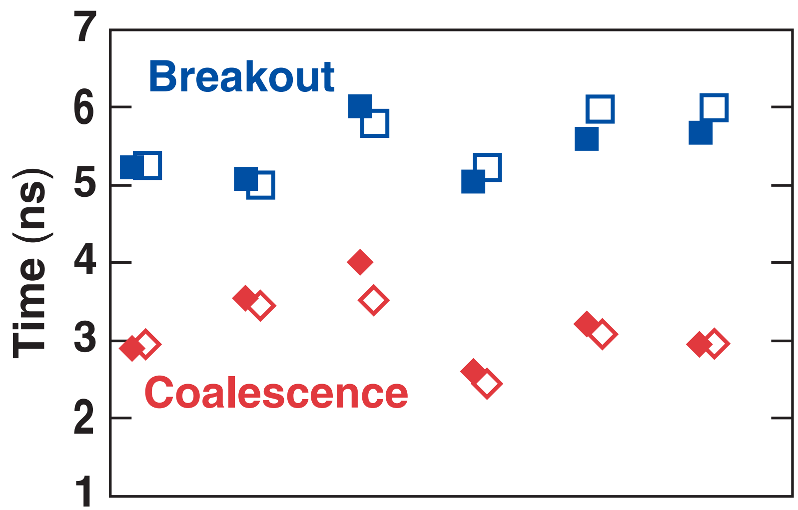
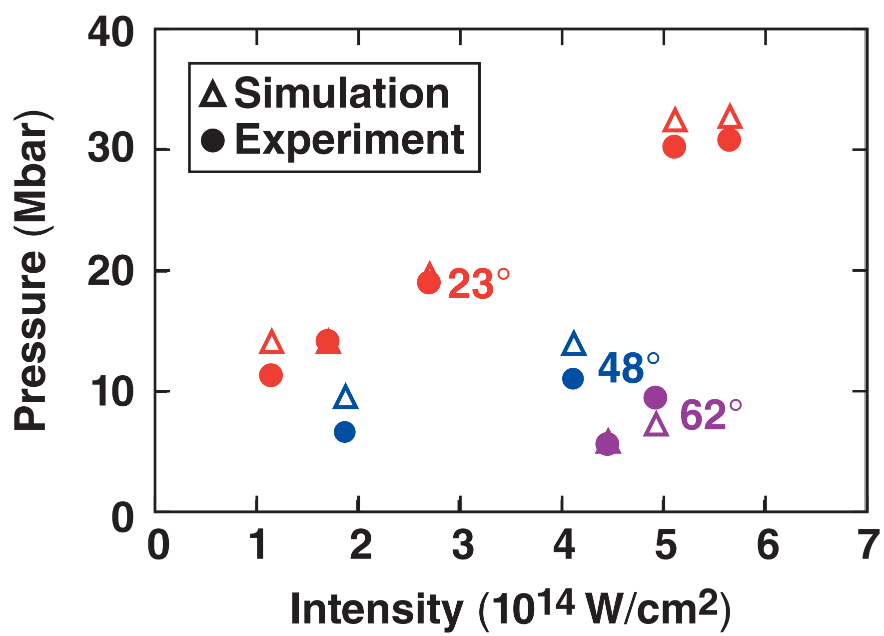
Multi-pulse experiments on CH targets are well simulated using a 1-D hydrocode with ray tracing

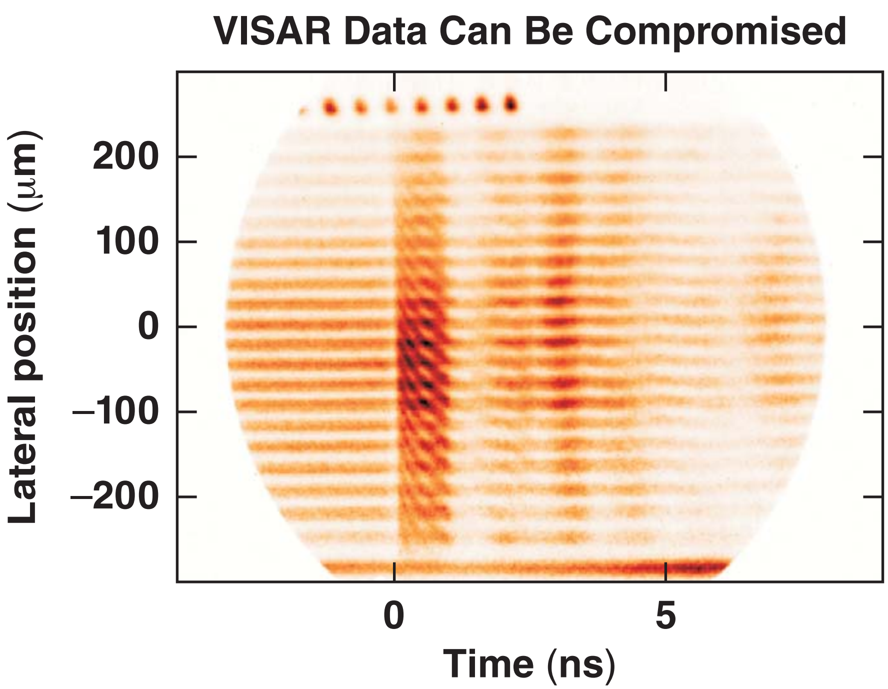


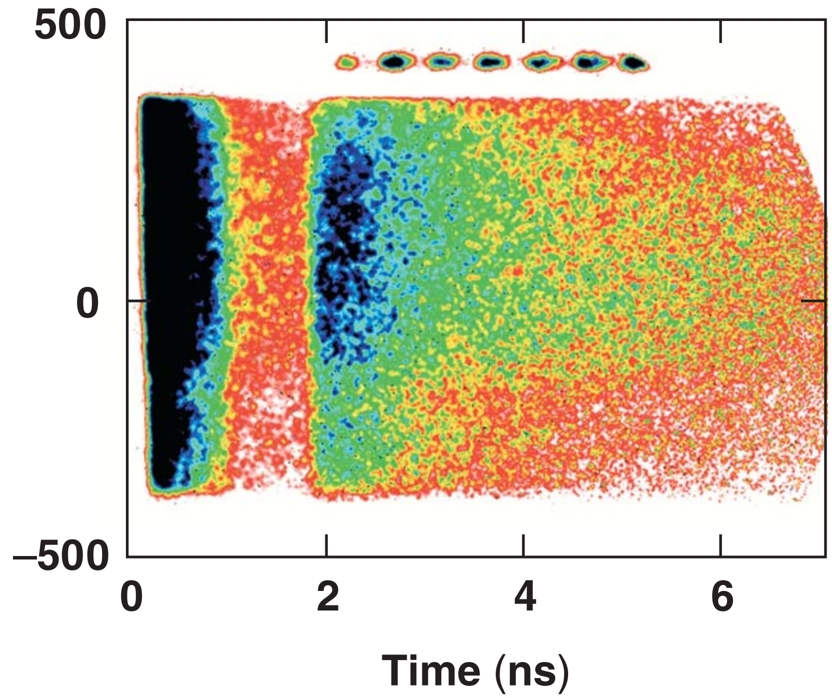


E13400

Elena Vianello, CO1.014

Shock coalescence is readily detected in self emission, even when VISAR blanks

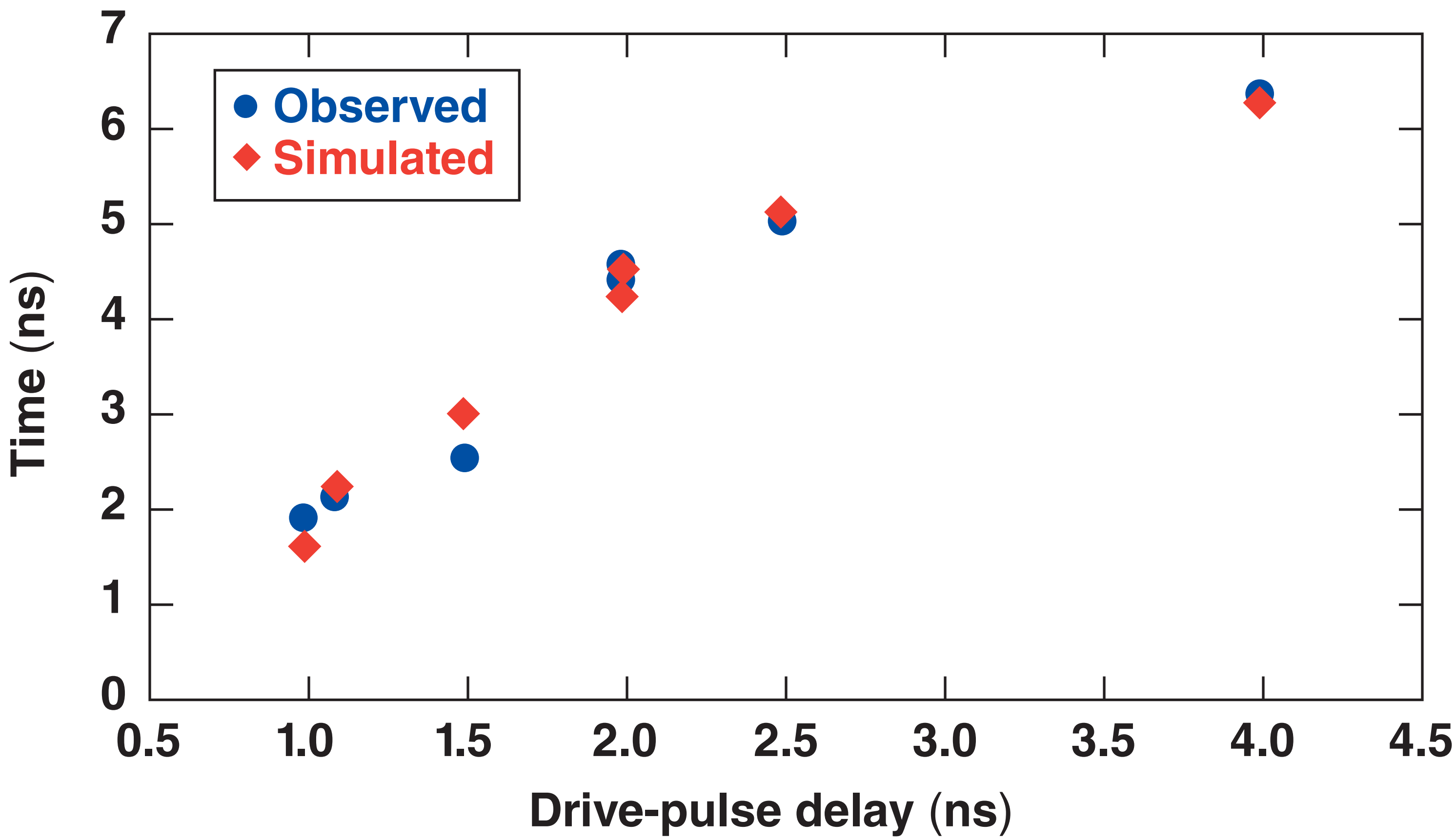




Joshua Miller, CO1.015

Shock-Timing in Cryogenic D_2

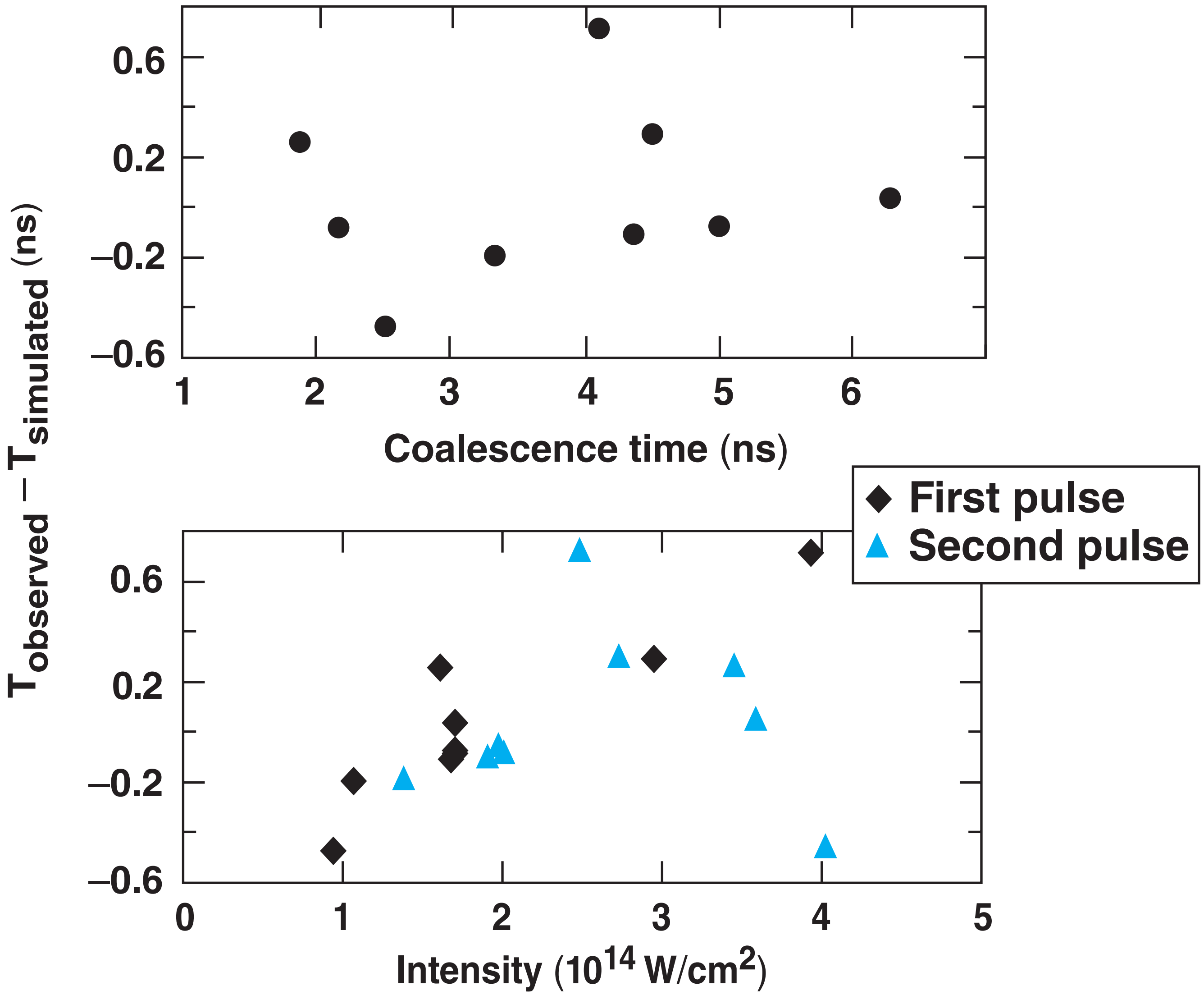
Coalescence time correlates with interpulse delay



E13404

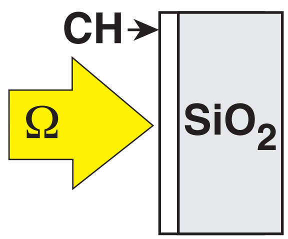
Shock-Timing in Cryogenic D_2

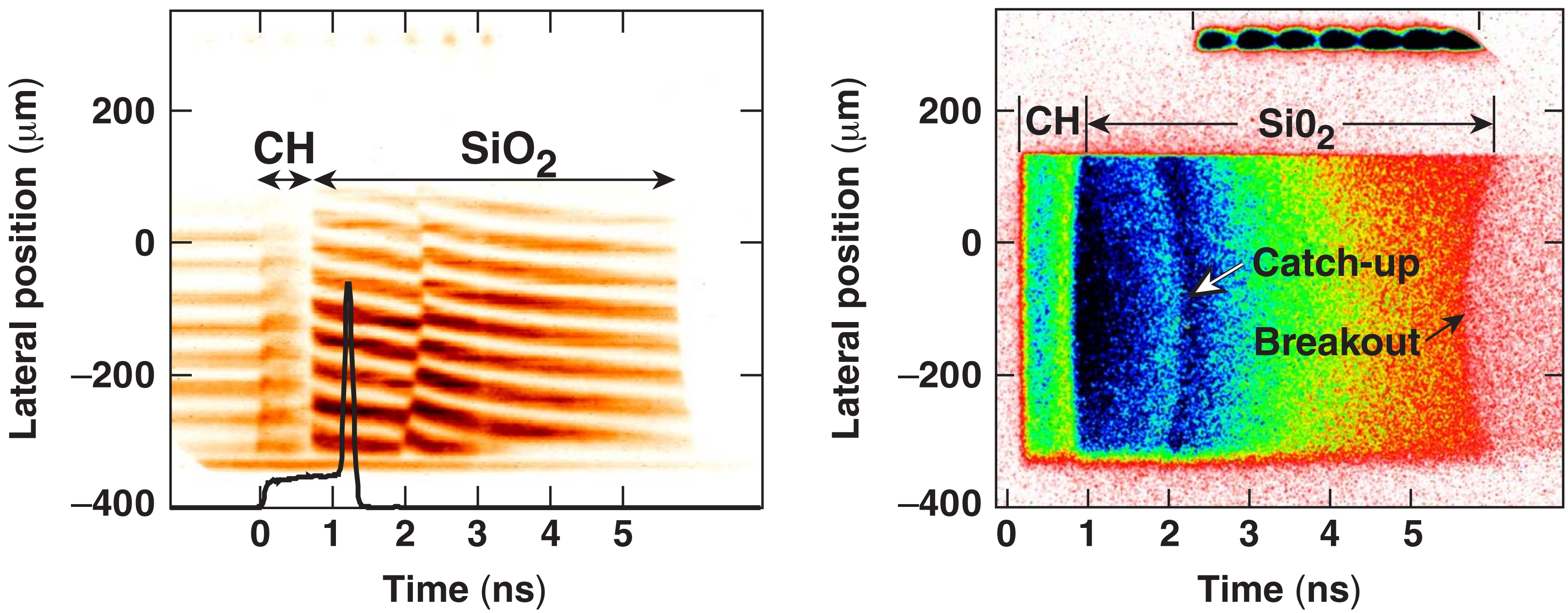
Prediction accuracy does not correlate with coalescence time, but does with intensity



E13405

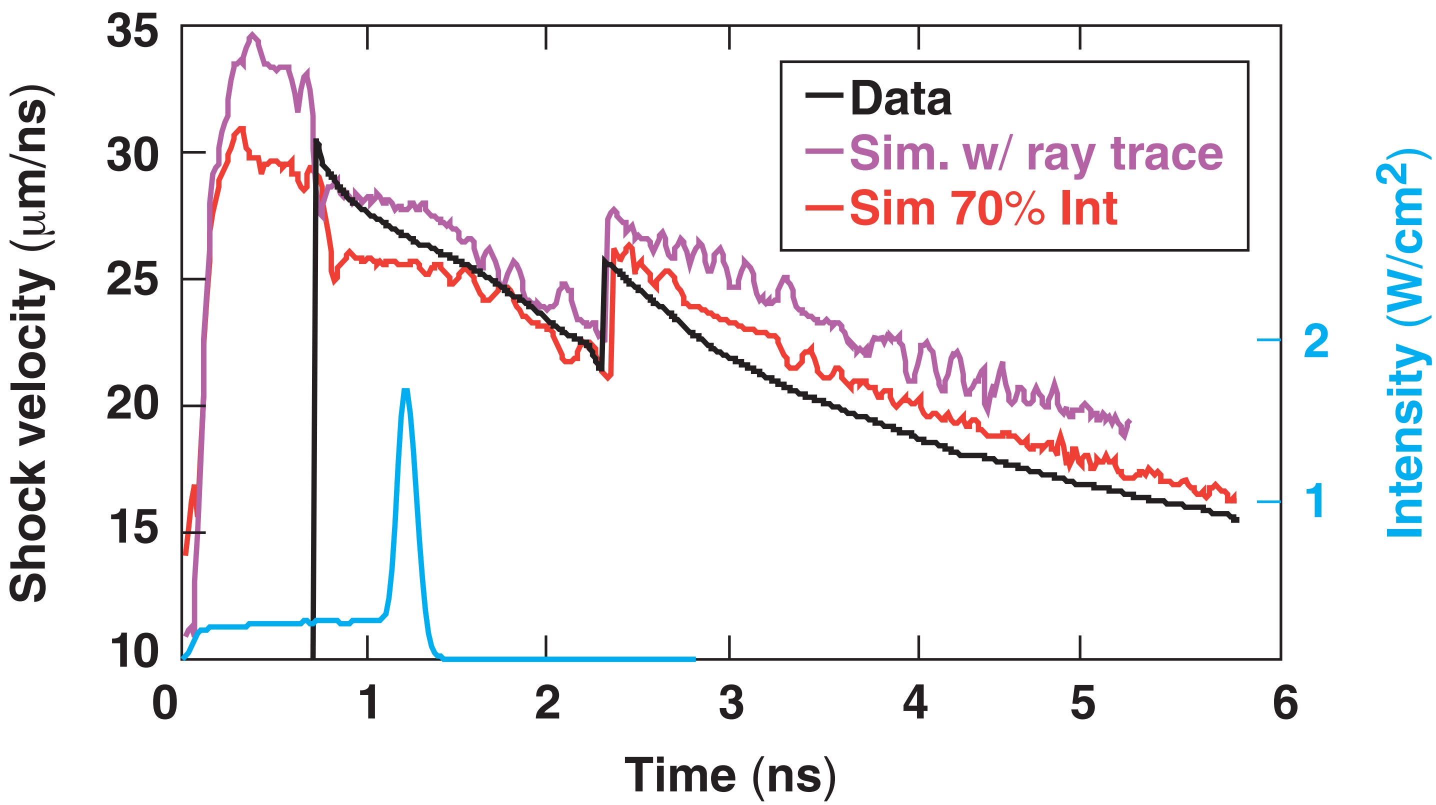
Shock velocities can be measured during the entire drive pulse using surrogate targets





E13399

Velocity profiles from shaped pulses are used to constrain models



E13407

Summary/Conclusions

Double-pulse experiments are used to study shock timing for ICF target designs

UR LLE

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