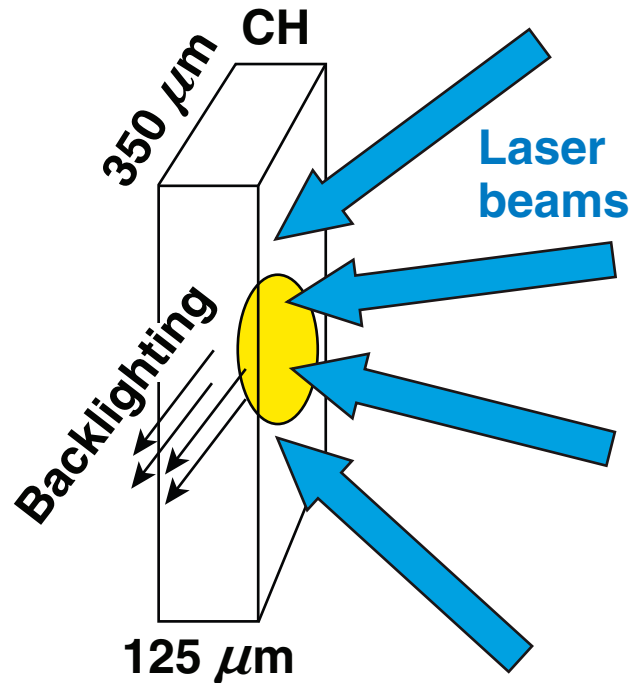


Analysis of the Compressibility Experiments Performed on the OMEGA Laser System



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Summary

The compression experiments performed on OMEGA have been optimized using *DRACO* simulations



- Preliminary foil-compression experiments with planar targets have been performed on the OMEGA Laser Facility.
- Good agreement between *DRACO* simulations and experiments has been obtained.
- Simulations have shown non-negligible 2-D effects in these experiments.
- 2-D effects will be reduced in our optimized compressibility experiments.

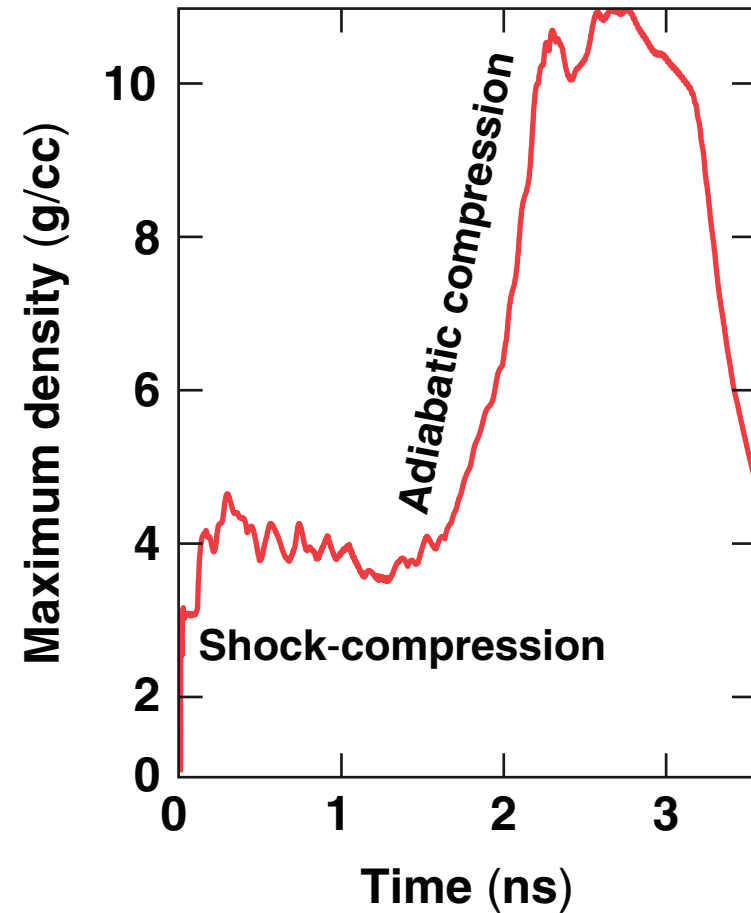
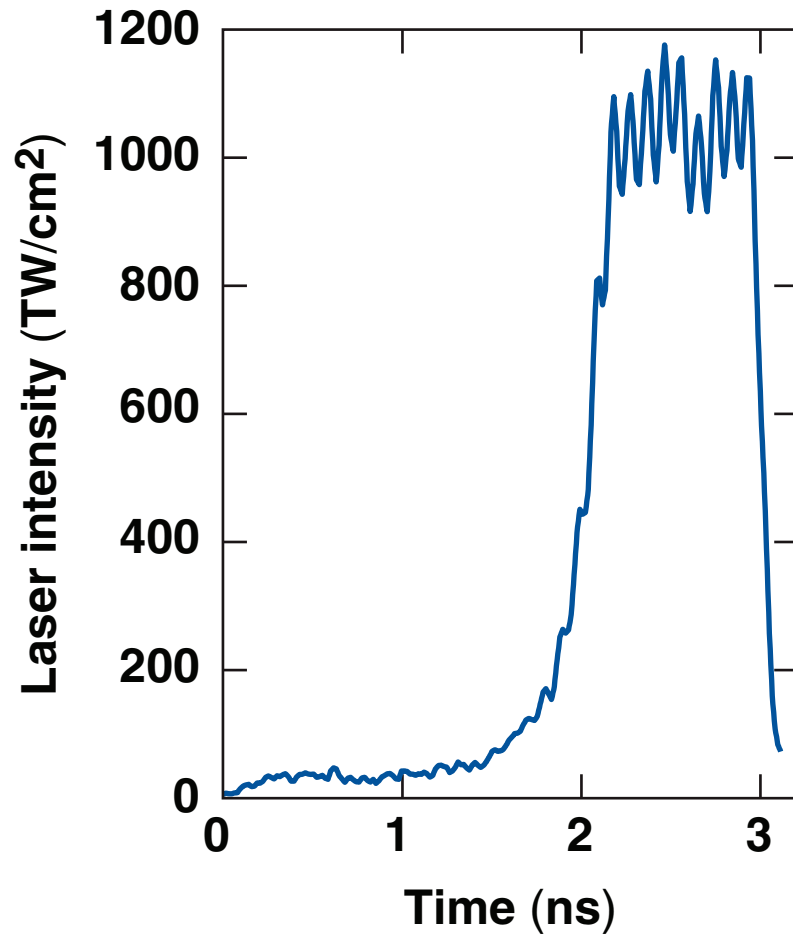
Collaborators



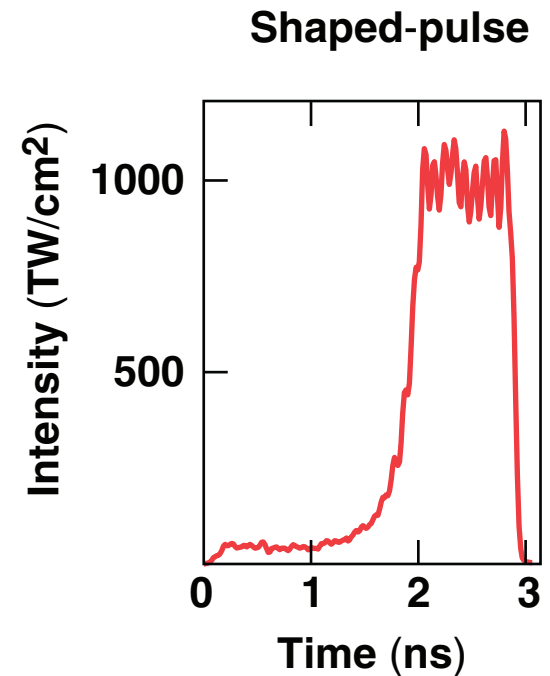
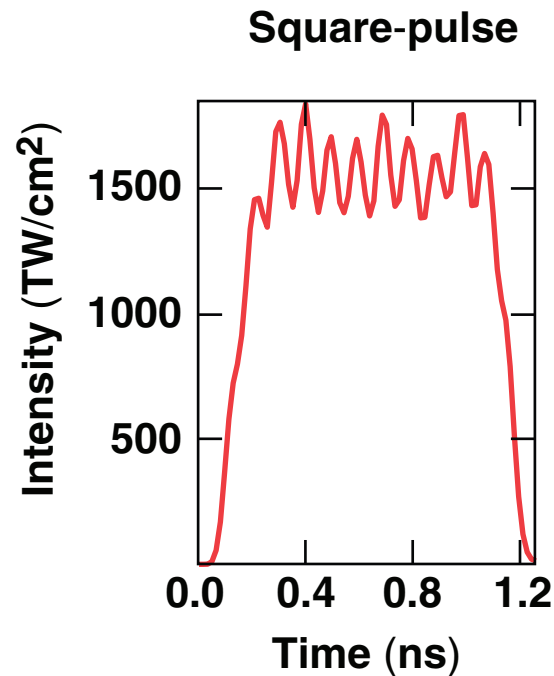
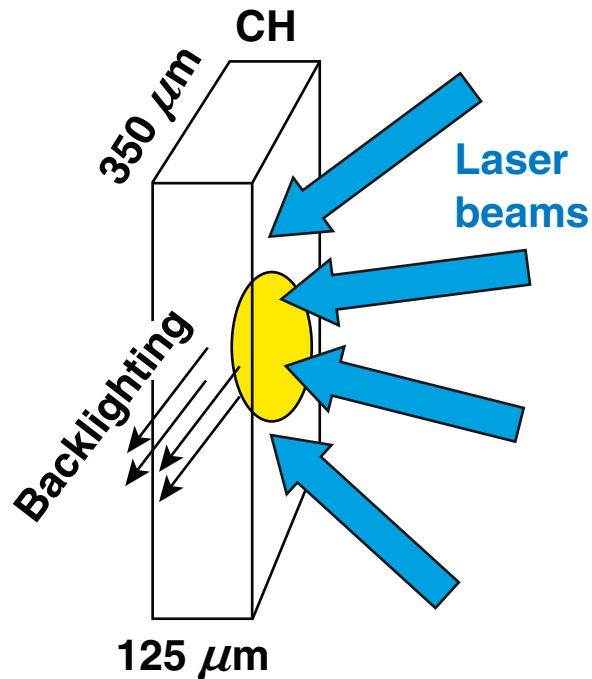
**V. N. Goncharov, V. A. Smalyuk,
J. P. Knauer, T. C. Sangster, I. V. Igumenshchev,
J. A. Marozas, and P. B. Radha**

**Laboratory for Laser Energetics
University of Rochester**

ICF designs rely on high compression of the target shell

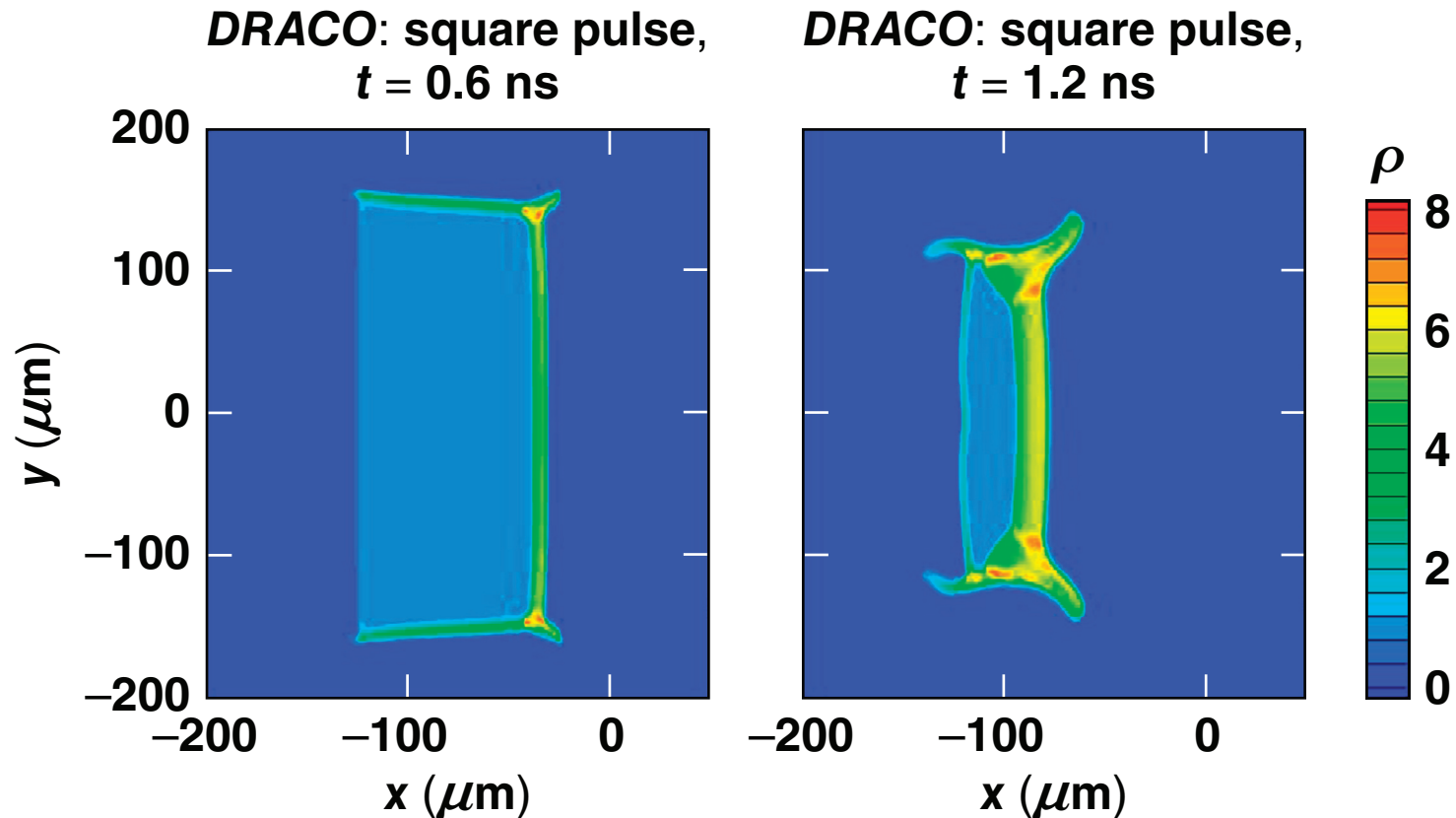


Preliminary compression experiments have been conducted on the OMEGA Laser System



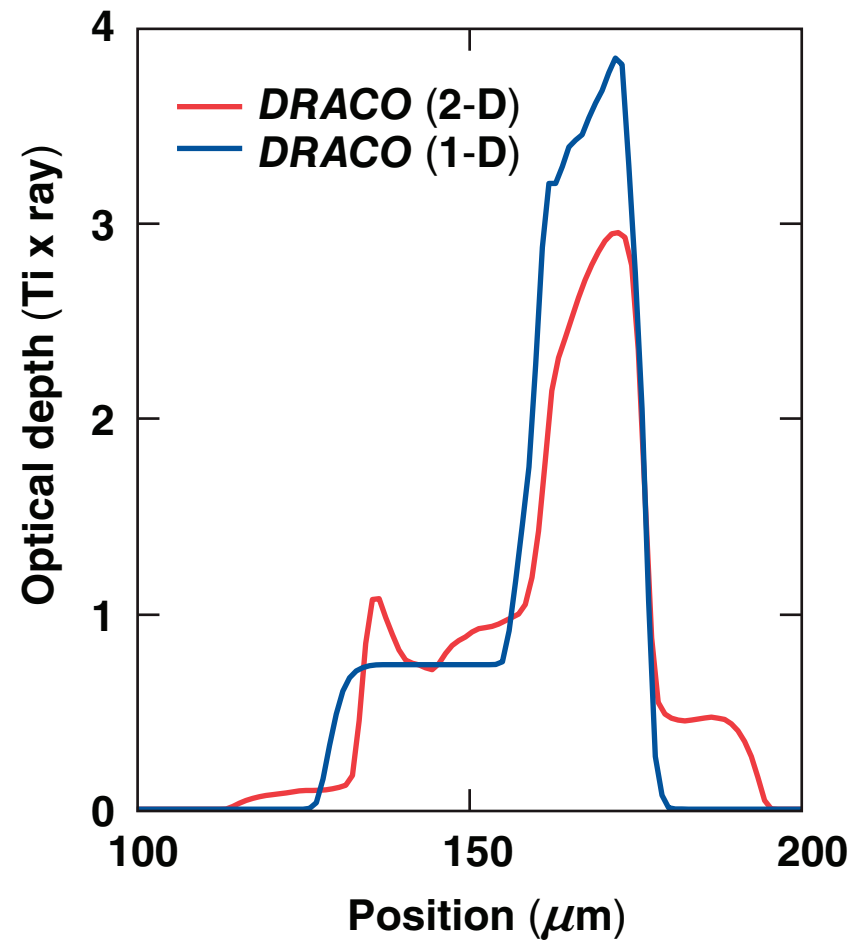
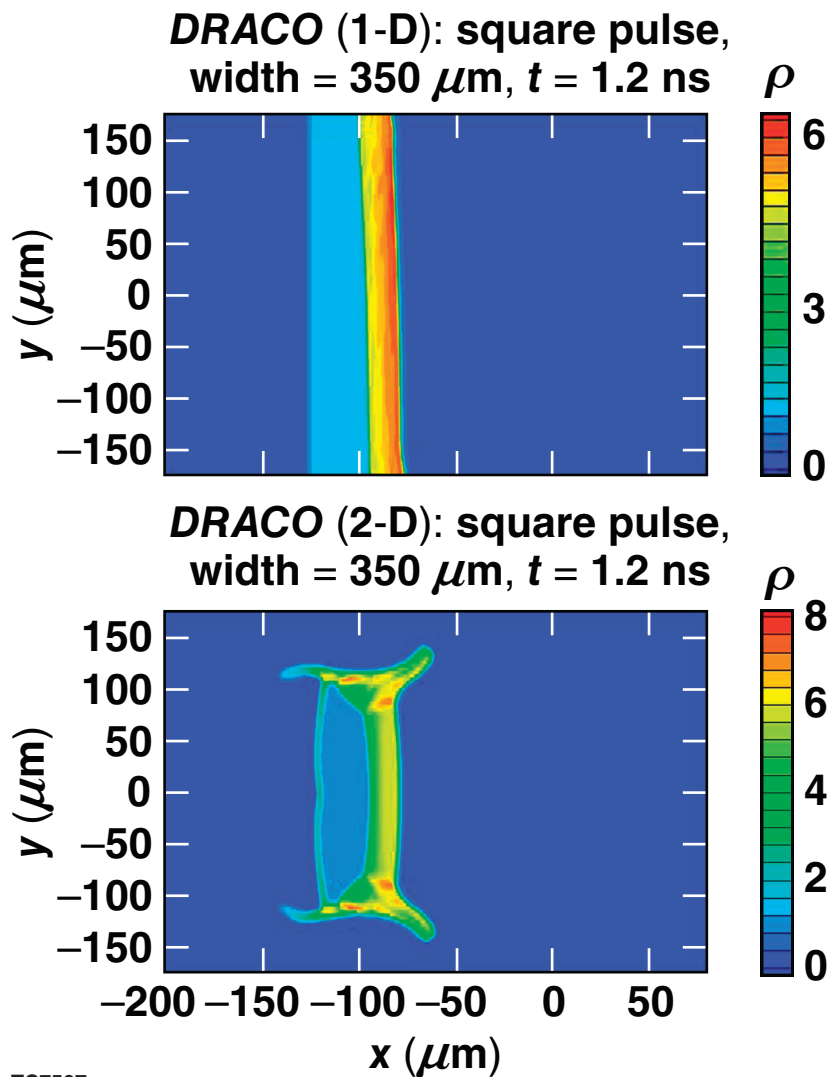
The density profile of the compressed foil can be directly measured.

Two-dimensional *DRACO* simulations are required to analyze the experiments

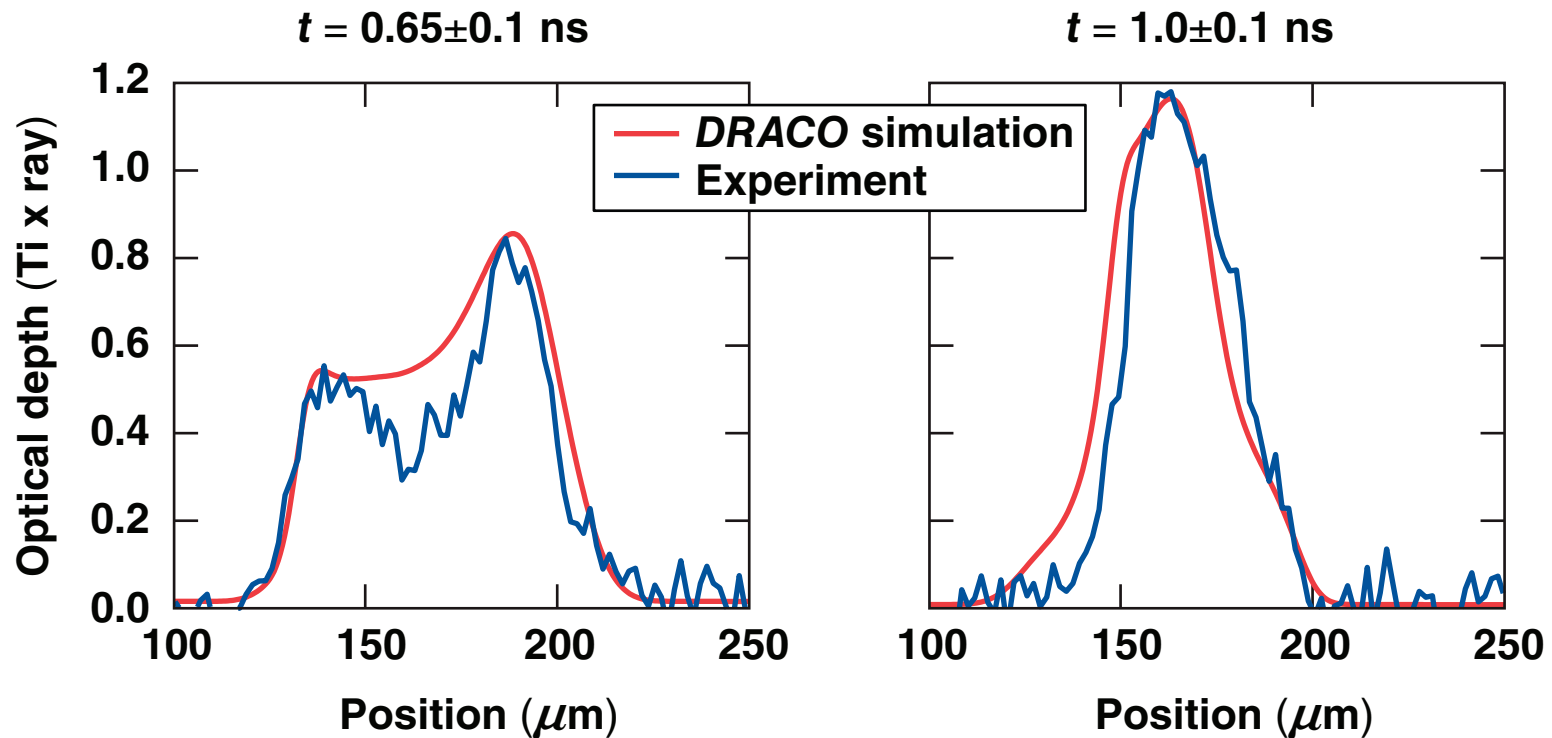


2-D effects are caused by the laser illumination from the target sides.

DRACO simulations show significant 2-D effects in the experiments



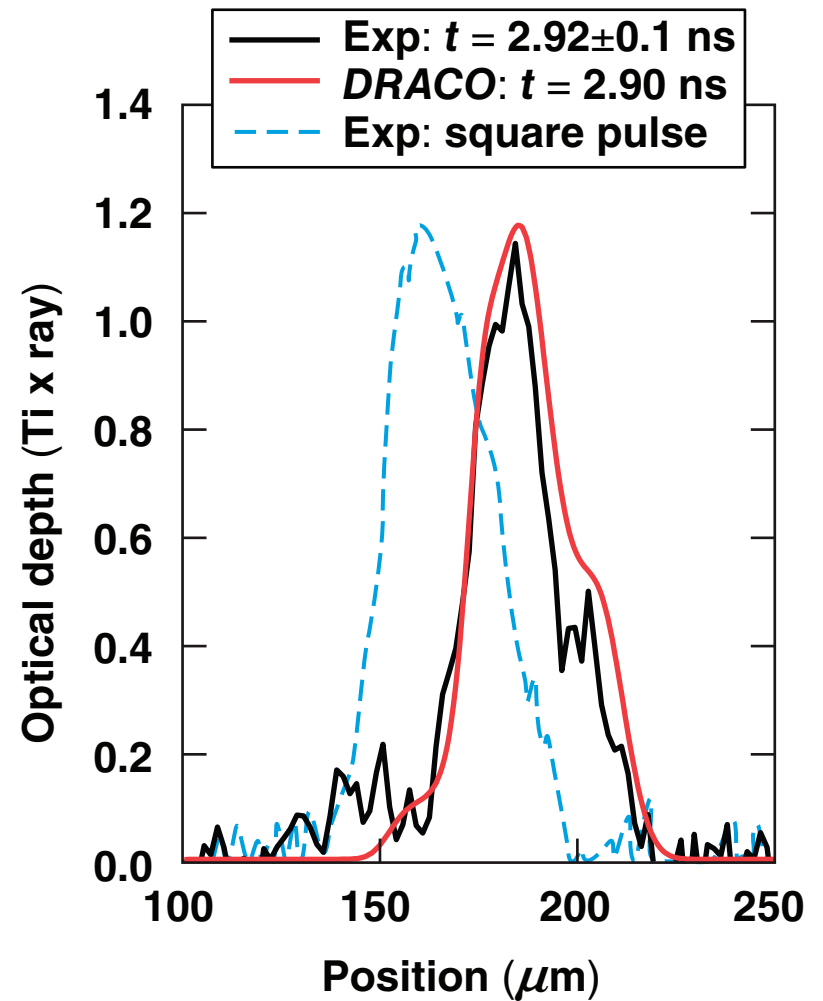
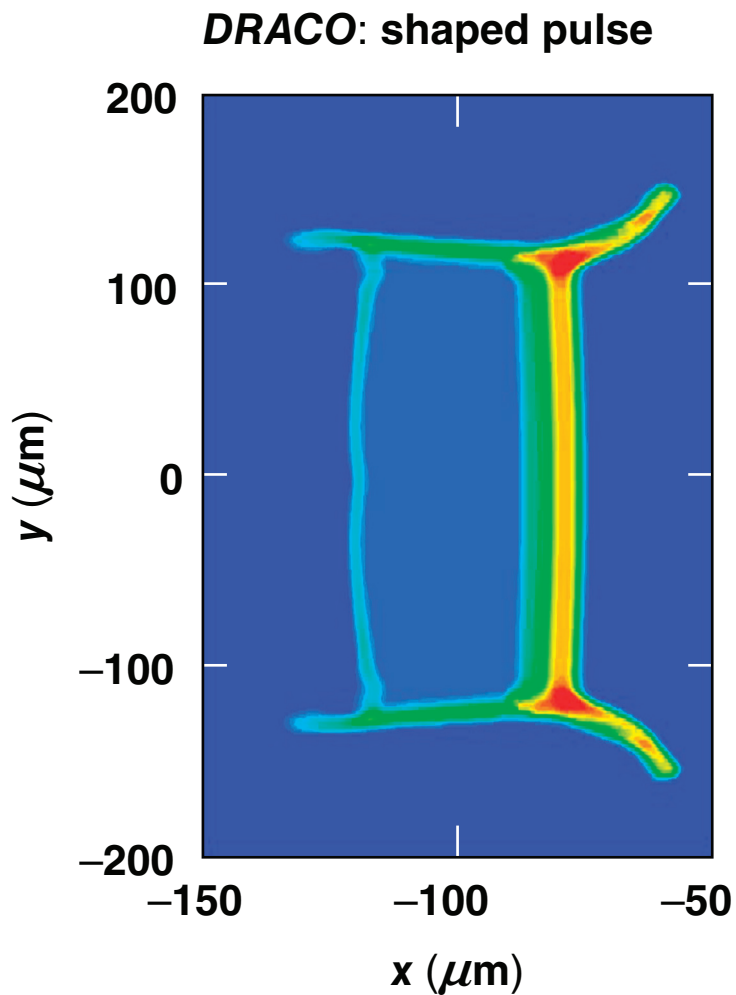
Good agreement between simulations and experiments is obtained



Instrumental resolution

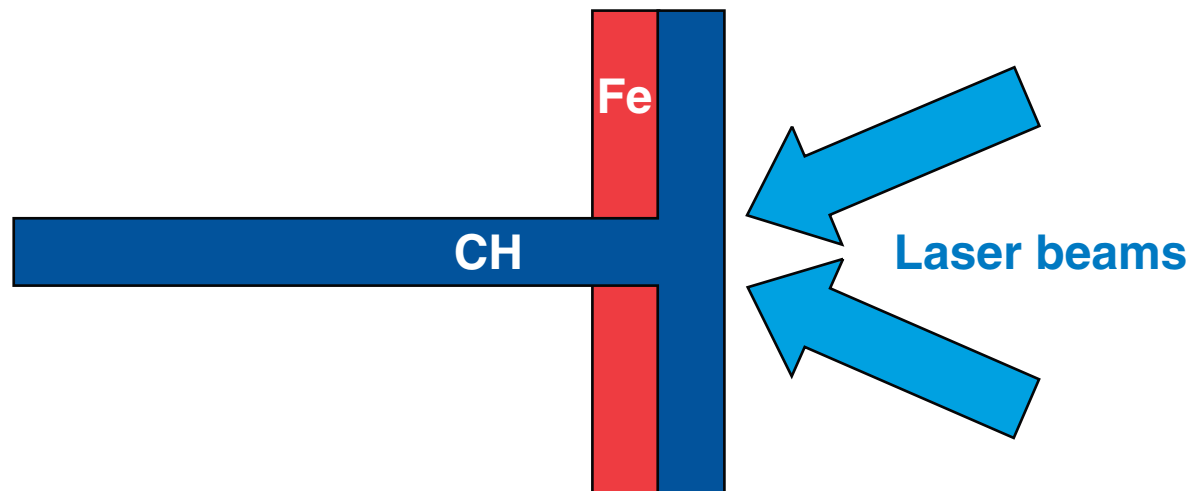
- Spatial: $\sim 15 \mu\text{m}$
- Temporal: ~ 80 ps

High spatial and temporal resolution is needed to distinguish the compression difference



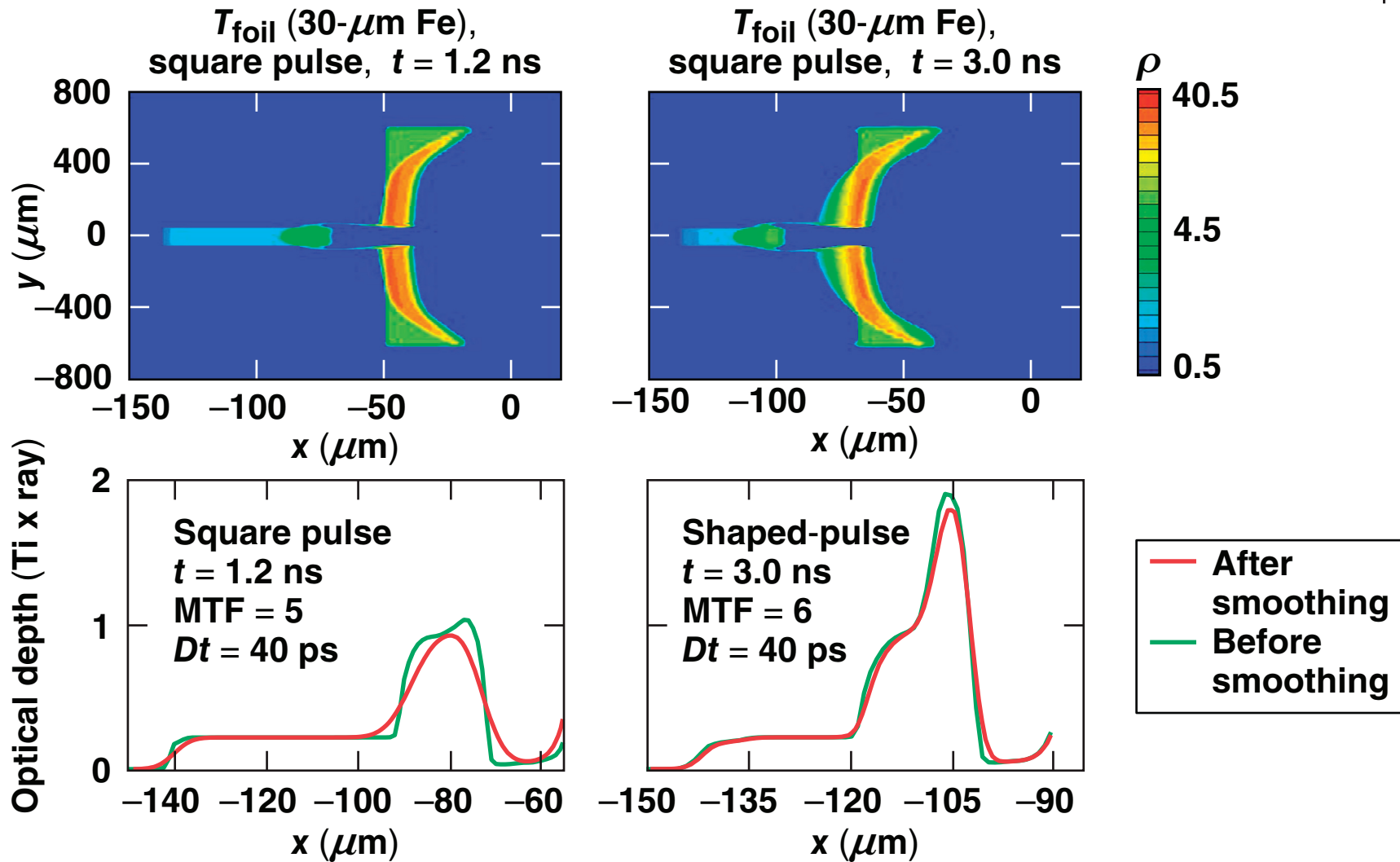
2-D effects will be reduced in the new design of compressibility experiments

- T-shaped targets



- *DRACO* simulations predict much less 2-D effects for the new designed T-shaped targets.

Adiabatic compression in shaped pulses can be observed by improving the temporal and spatial resolution of instrument



Better resolution is required: MTF ~ 5 μm ; $\mu t \sim 40$ ps

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