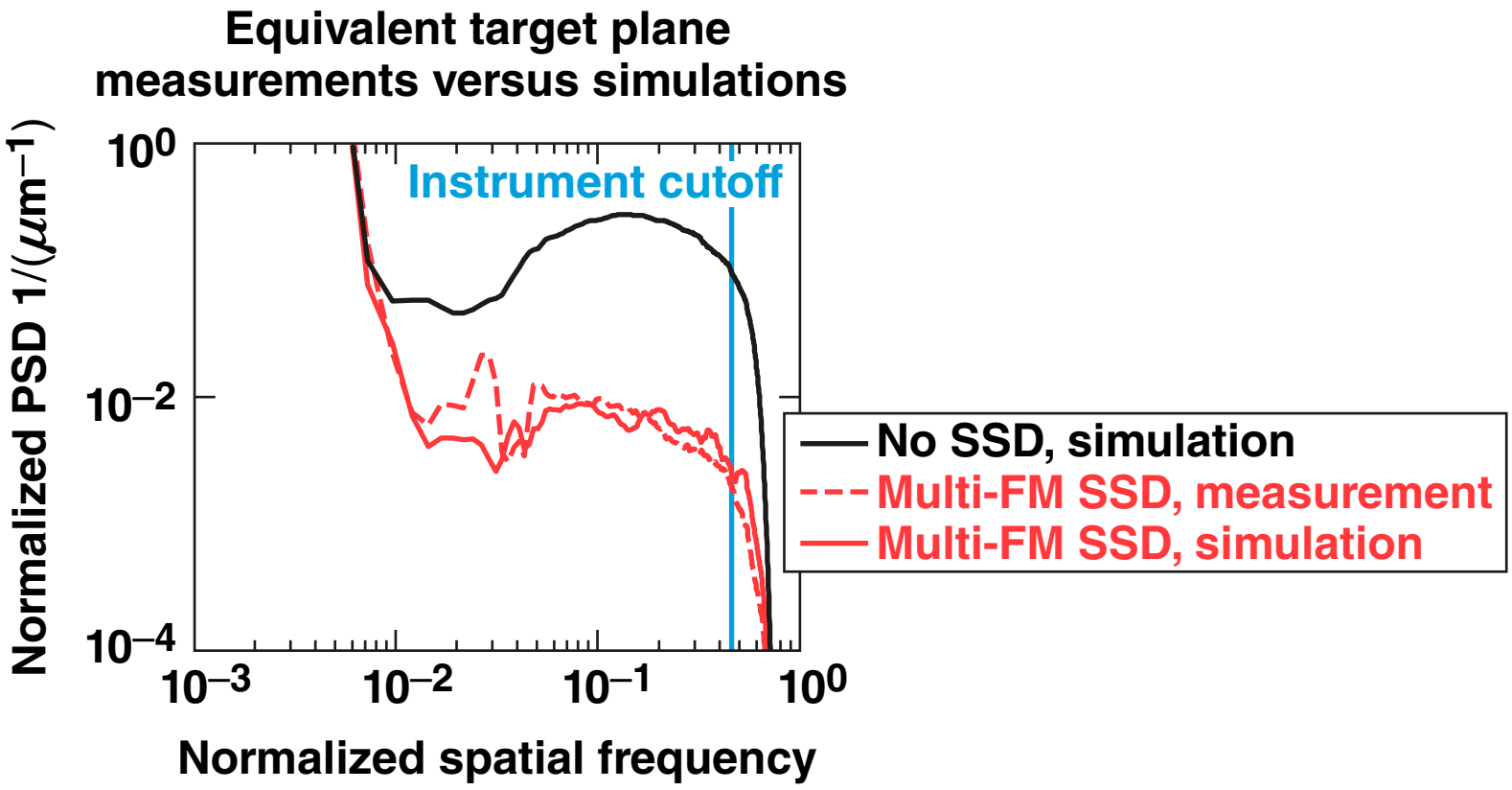
Two-Dimensional Numerical Evaluation of 1-D Multi-FM SSD Experiments



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Summary

1-D Multi-FM smoothing by spectral dispersion (SSD) has been validated with equivalent target plane (ETP) measurements on OMEGA EP

UR LLE

- 1-D Multi-FM SSD smoothing is essential for polar-drive ignition on the NIF
- OMEGA EP ETP measurements are in agreement with the theoretical predictions
- Two-dimensional *DRACO* simulations use time-dependent on-target laser spots to model the speckle motion caused by SSD
- Imprint efficiency measurements are underway on OMEGA EP

Collaborators

M. Hohenberger, J. A. Marozas, M. J. Bonino, D. Canning, T. J. B. Collins, T. J. Kessler, P. W. McKenty, T. C. Sangster, and J. D. Zuegel

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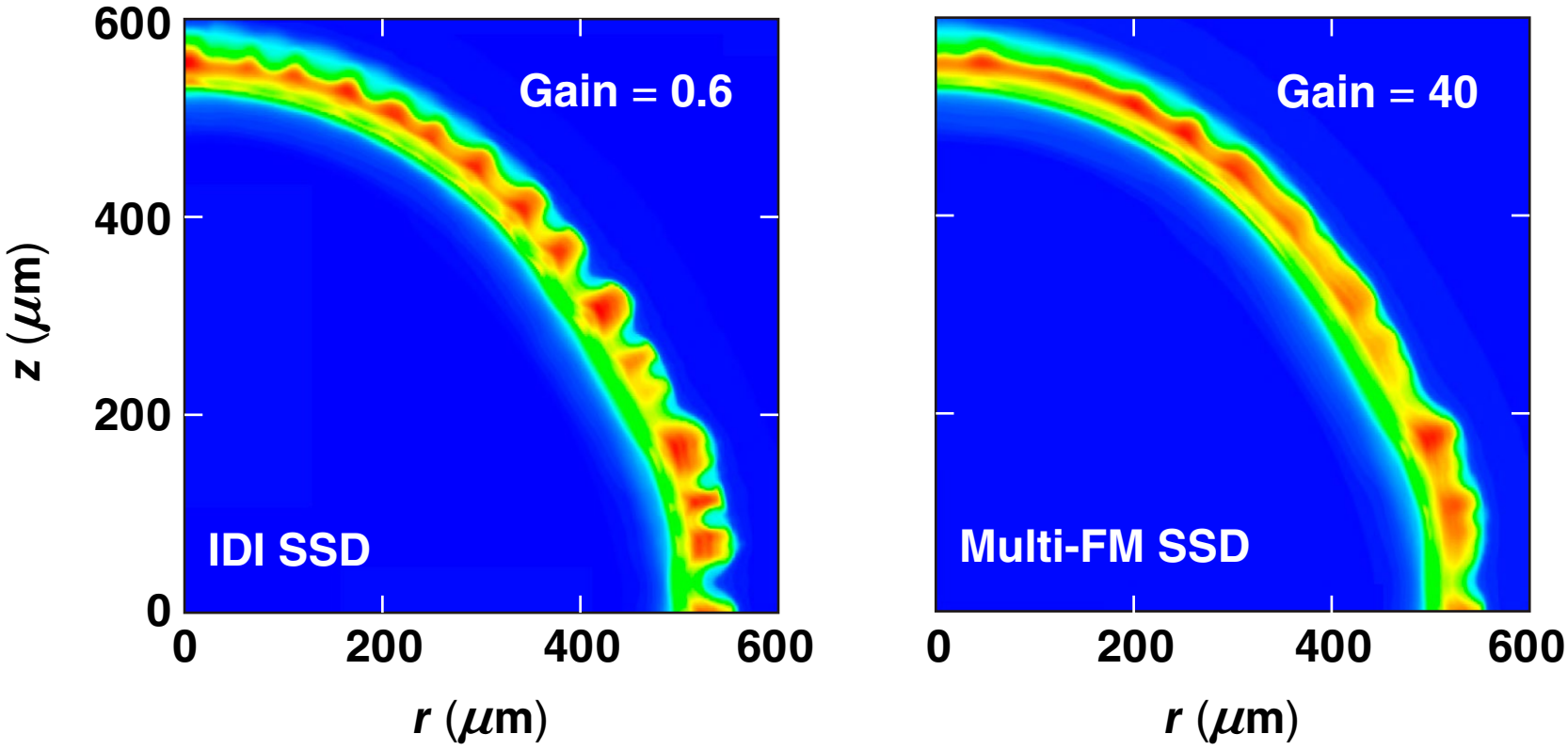
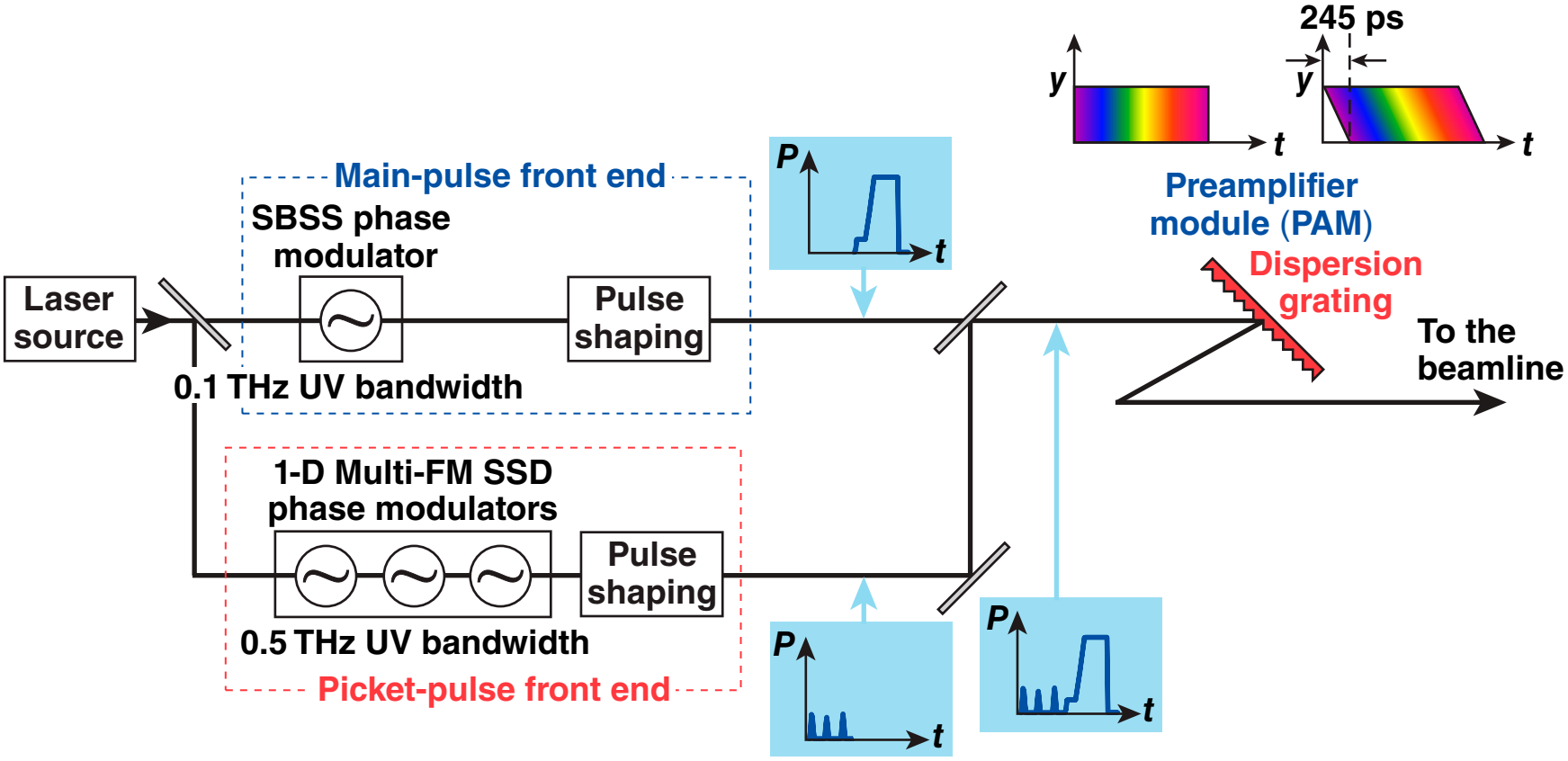
Multi-FM SSD smoothing is essential for polar-drive ignition on the NIF



TC9842a

One of the OMEGA EP beams can be operated with either SBS-suppression (SBSS) SSD or Multi-FM SSD

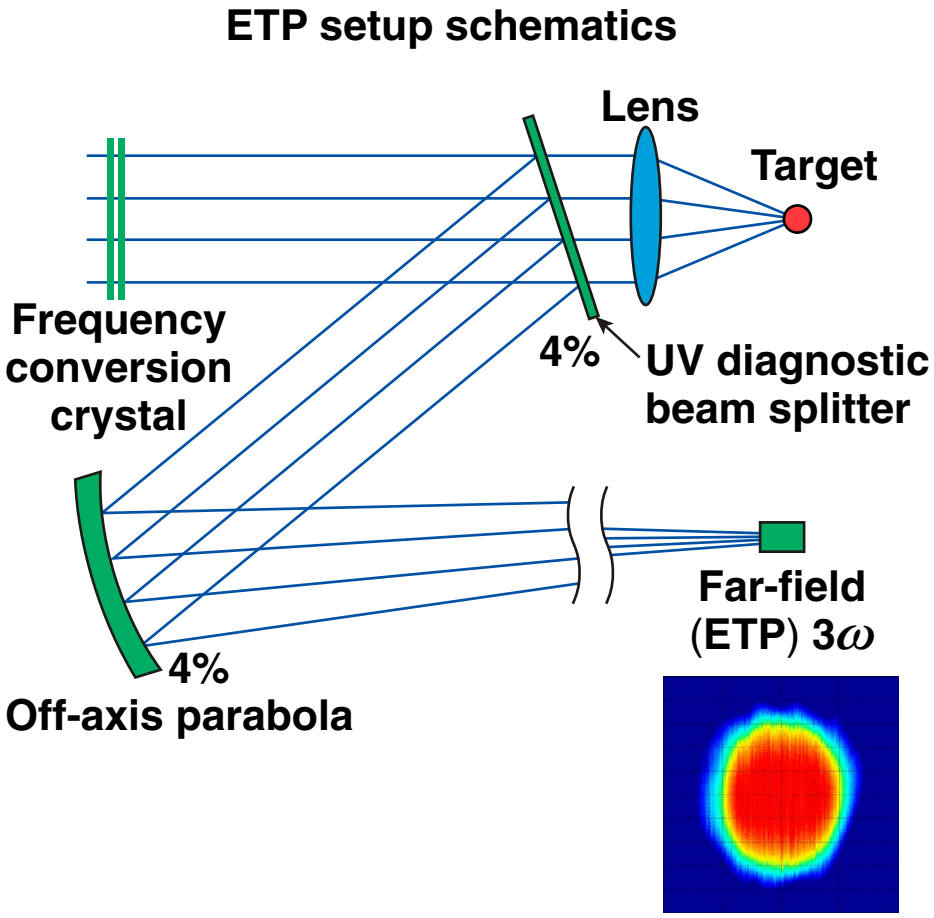
- An OMEGA EP is effectively a NIF beam
- A NIF PAM was installed at the front end of an OMEGA EP beamline

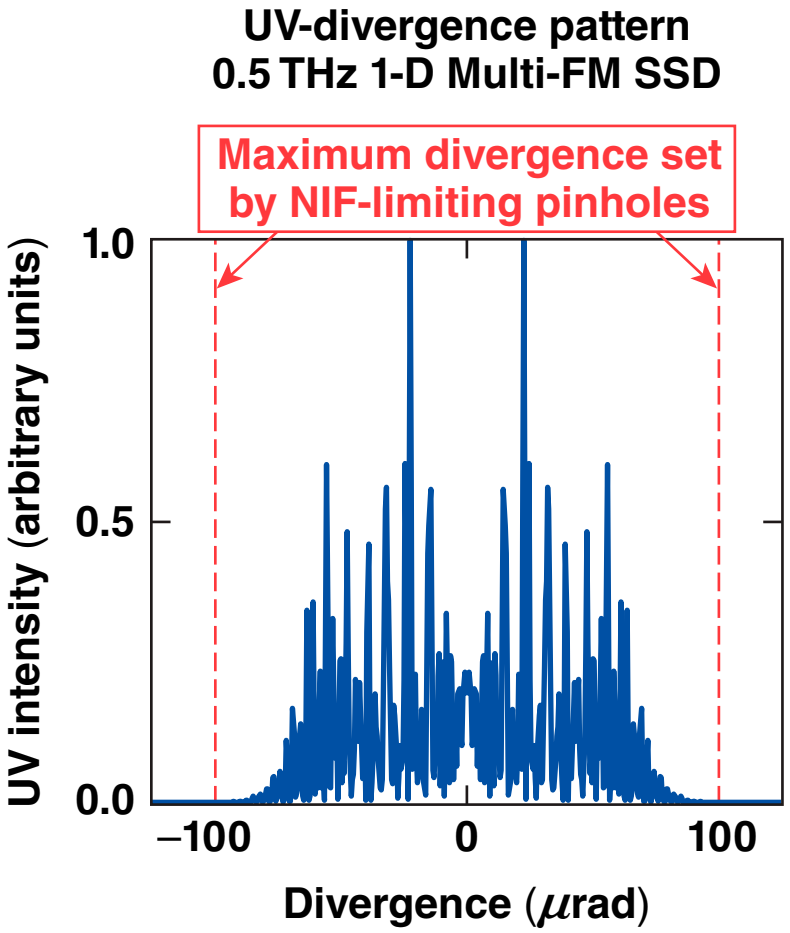


- Dispersion grating introduces 245 ps temporal shear

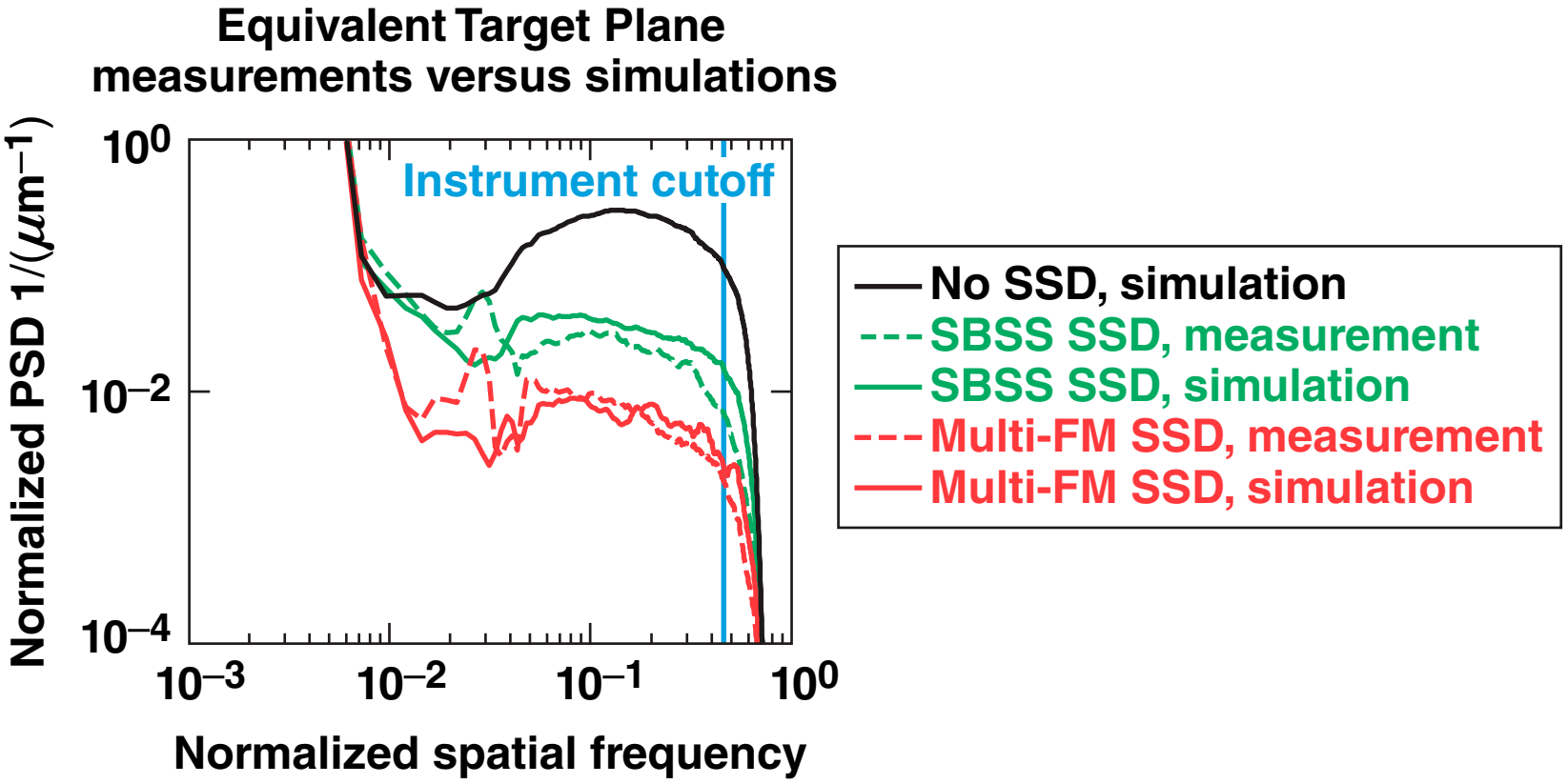
TC9853b

OMEGA EP ETP measurements have been performed on OMEGA EP



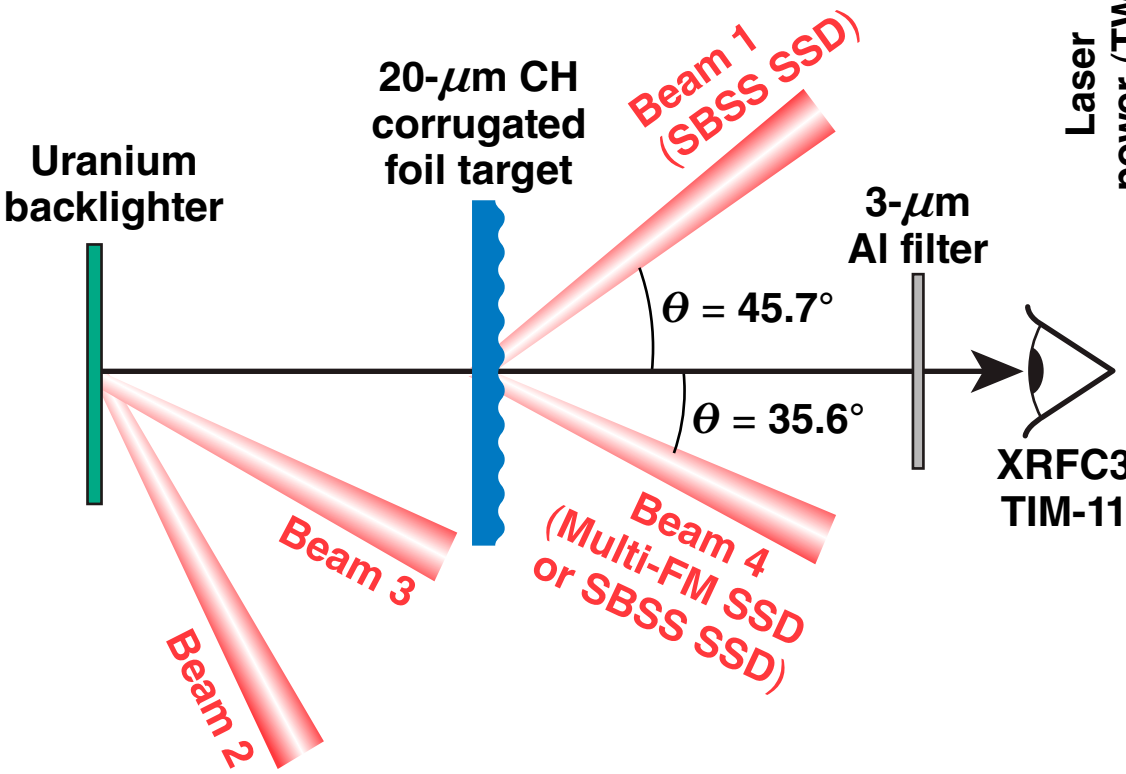


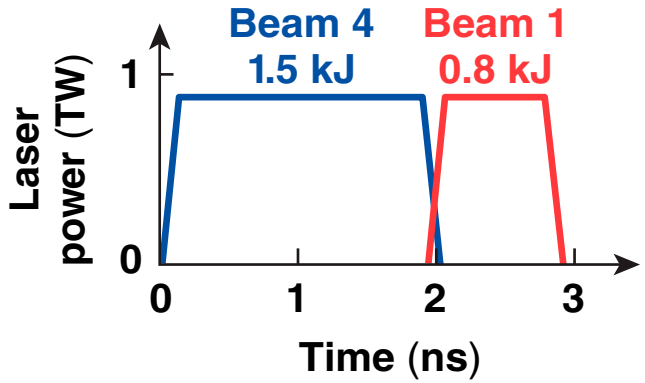
OMEGA EP ETP measurements are in agreement with the theoretical predictions

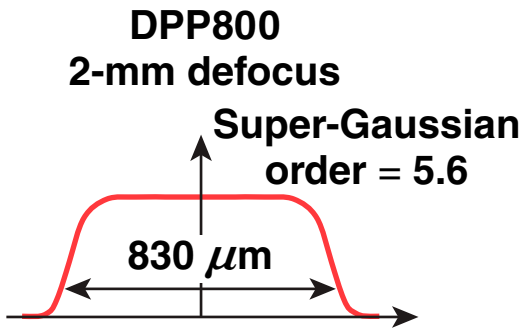


- ETP measurements used a laser pulse with two 130 ps pickets

Planar-foil RT experiments are using corrugated foils and face-on x-ray radiography to determine imprint efficiency

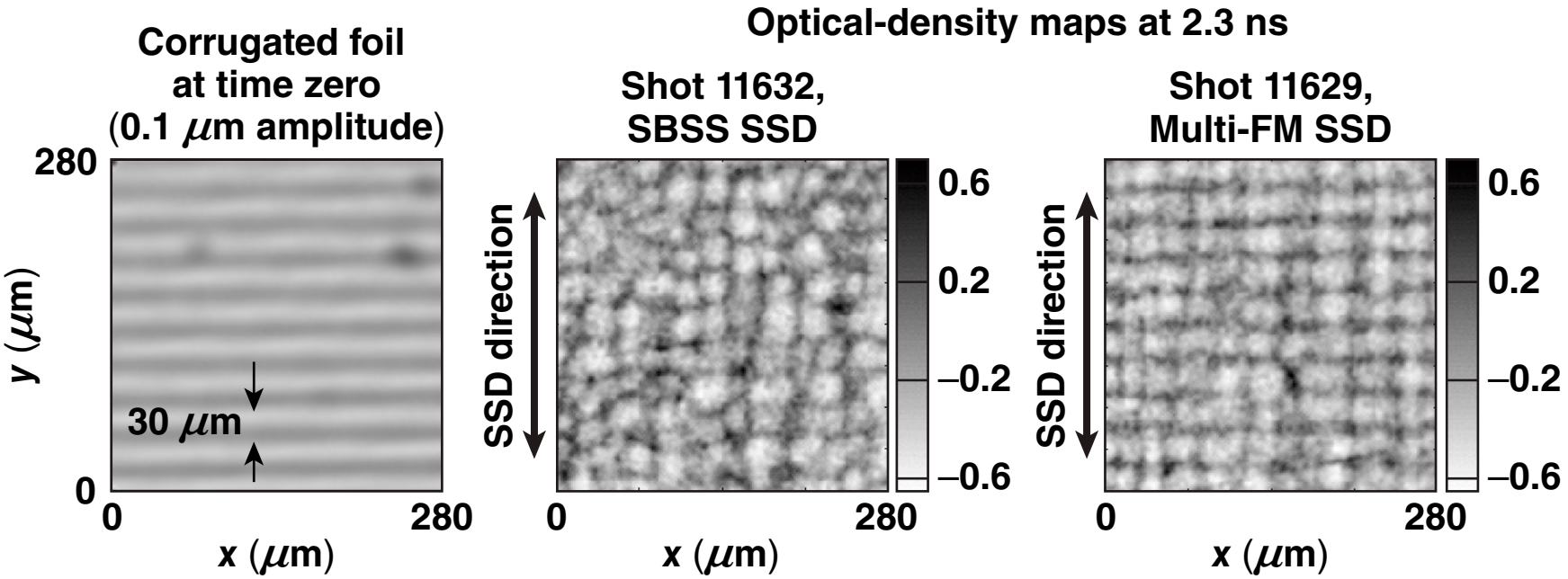






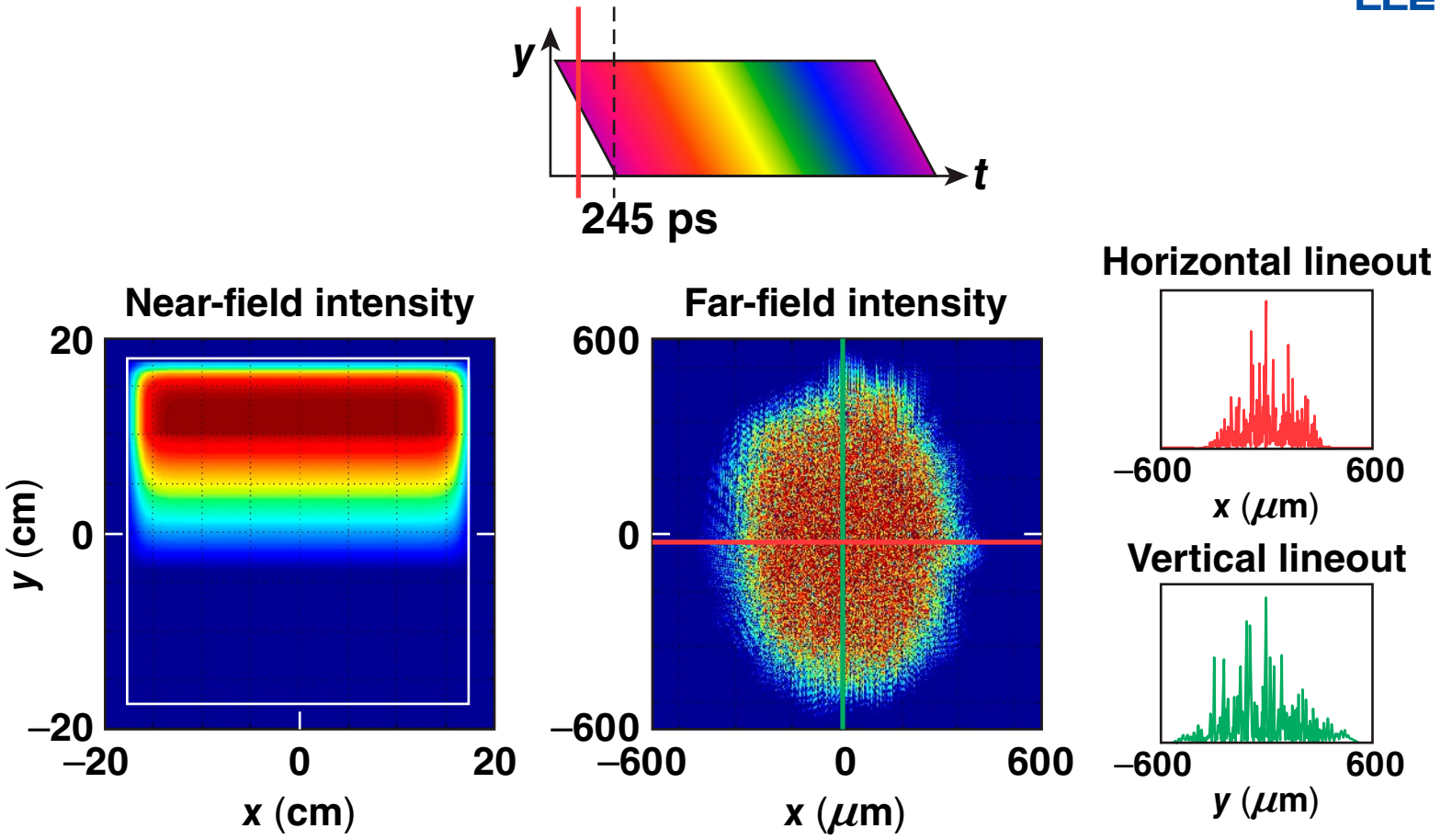
TC9843a

Initial experimental radiographs indicate that the foil nonuniformities are at the nonlinear stage of RT growth



TC10298

Calculated far-field laser spots* are used in *DRACO* to model the effects of SSD and diffraction-grating shear

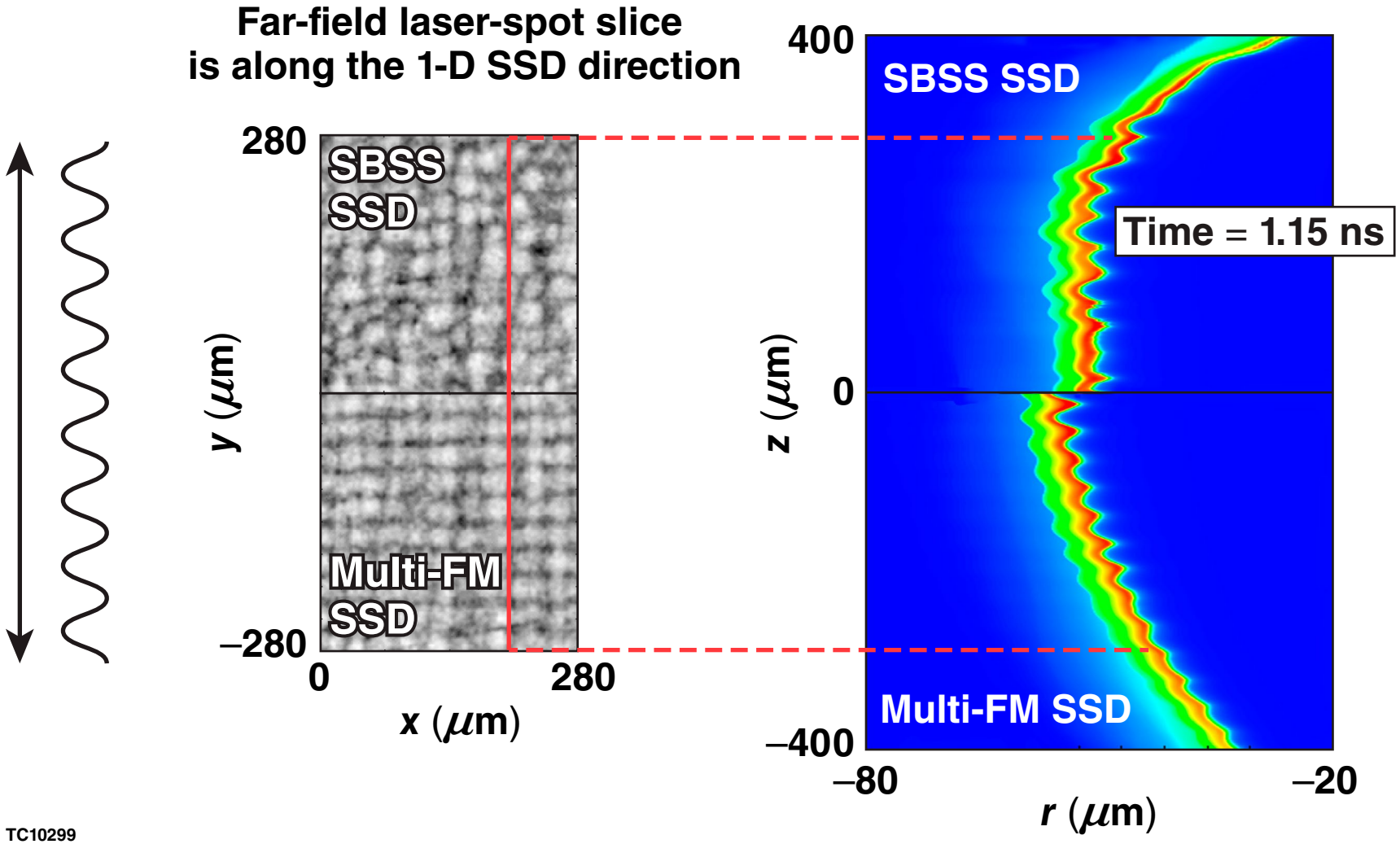


- The two-dimensional *DRACO* mesh resolves the shortest (speckle-size) imprint wavelengths

TC10297

*J. A. Marozas *et al.*, J. Opt. Soc. Am. B 19, 7 (2002).

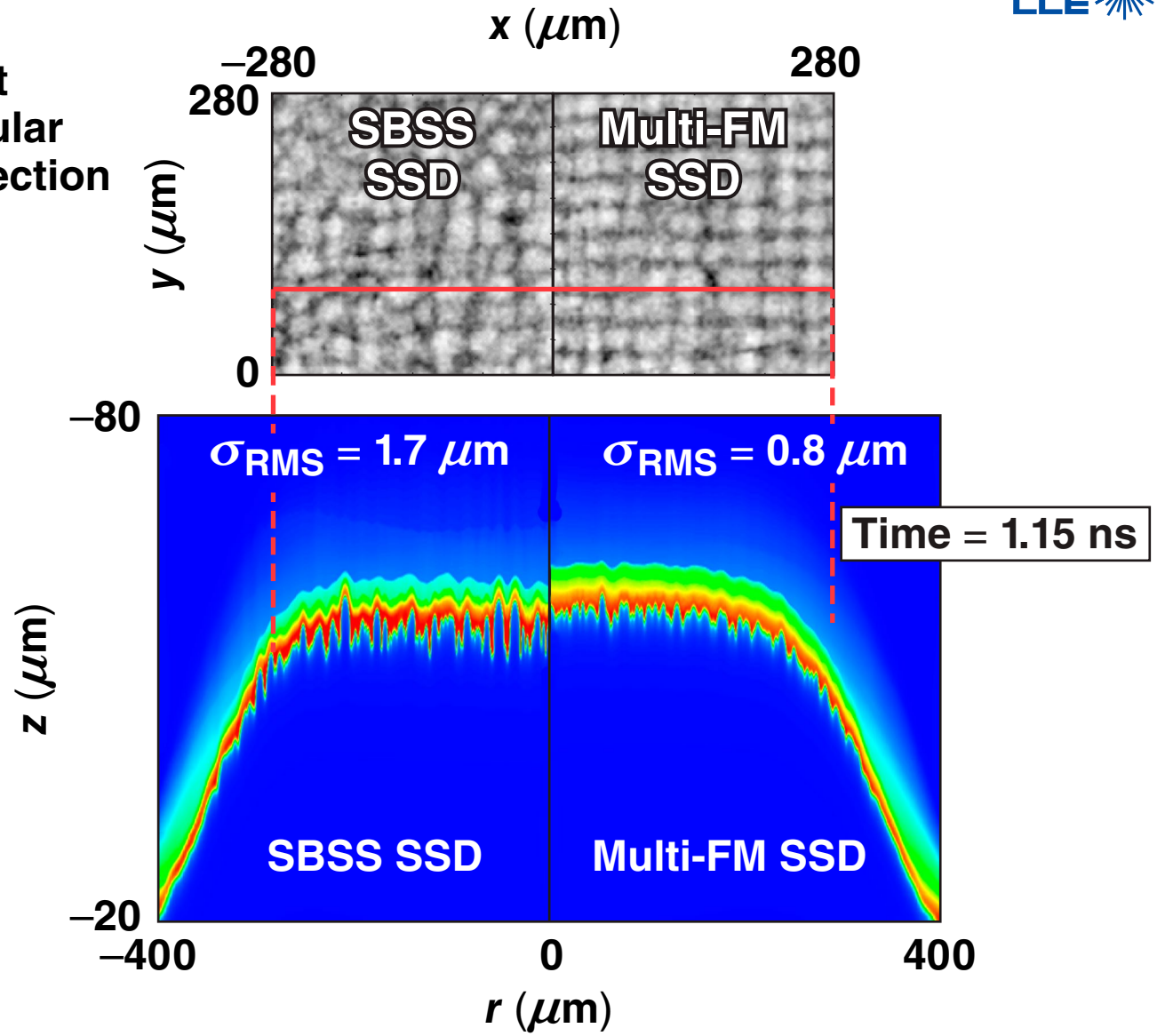
DRACO simulations show the suppression of imprint growth in the direction of 1-D Multi-FM SSD



TC10299

DRACO simulations also indicate that 1-D Multi-FM SSD reduces imprint growth in the perpendicular direction

Far-field laser-spot slice is perpendicular to the 1-D SSD direction



TC10300

Summary/Conclusions

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