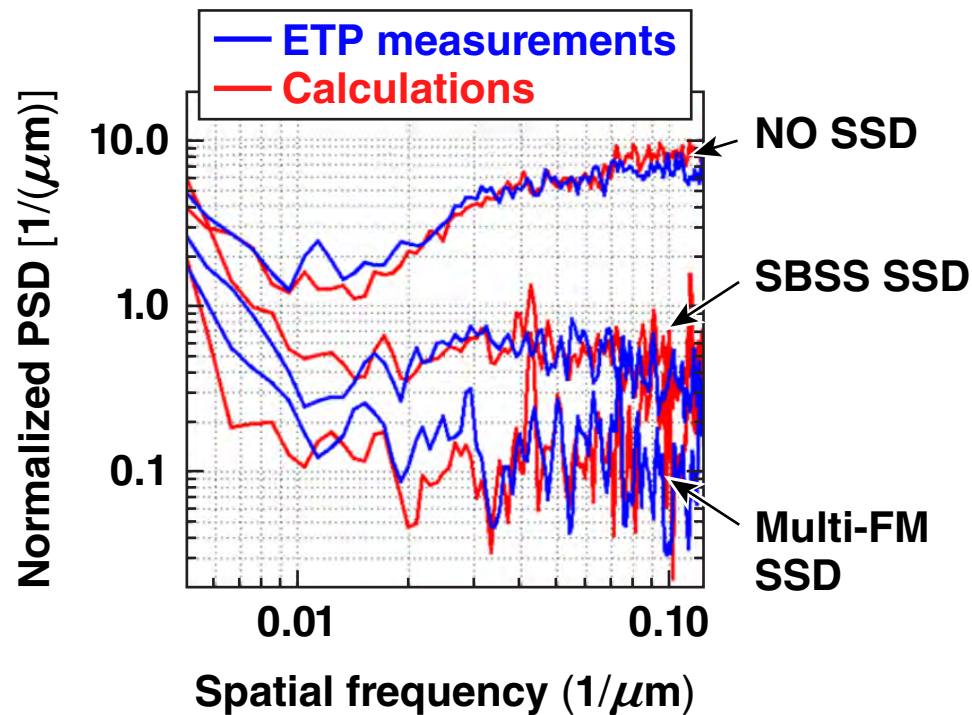


# Two-Dimensional Numerical Evaluation of 1-D Multi-FM SSD Experiments on OMEGA EP



Equivalent target plane (ETP)  
measurements versus simulations



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## Summary

# One-dimensional multi-FM smoothing by spectral dispersion (SSD) modeling has been validated with OMEGA EP experiments



- One-dimensional multi-FM SSD is essential for polar-drive ignition at the National Ignition Facility (NIF)
- High-magnification equivalent-target-plane (ETP) measurements on OMEGA EP are in agreement with the theoretical predictions
- Two-dimensional *DRACO* simulations use time-dependent far-field laser spots to model the speckle motion caused by SSD

# Collaborators

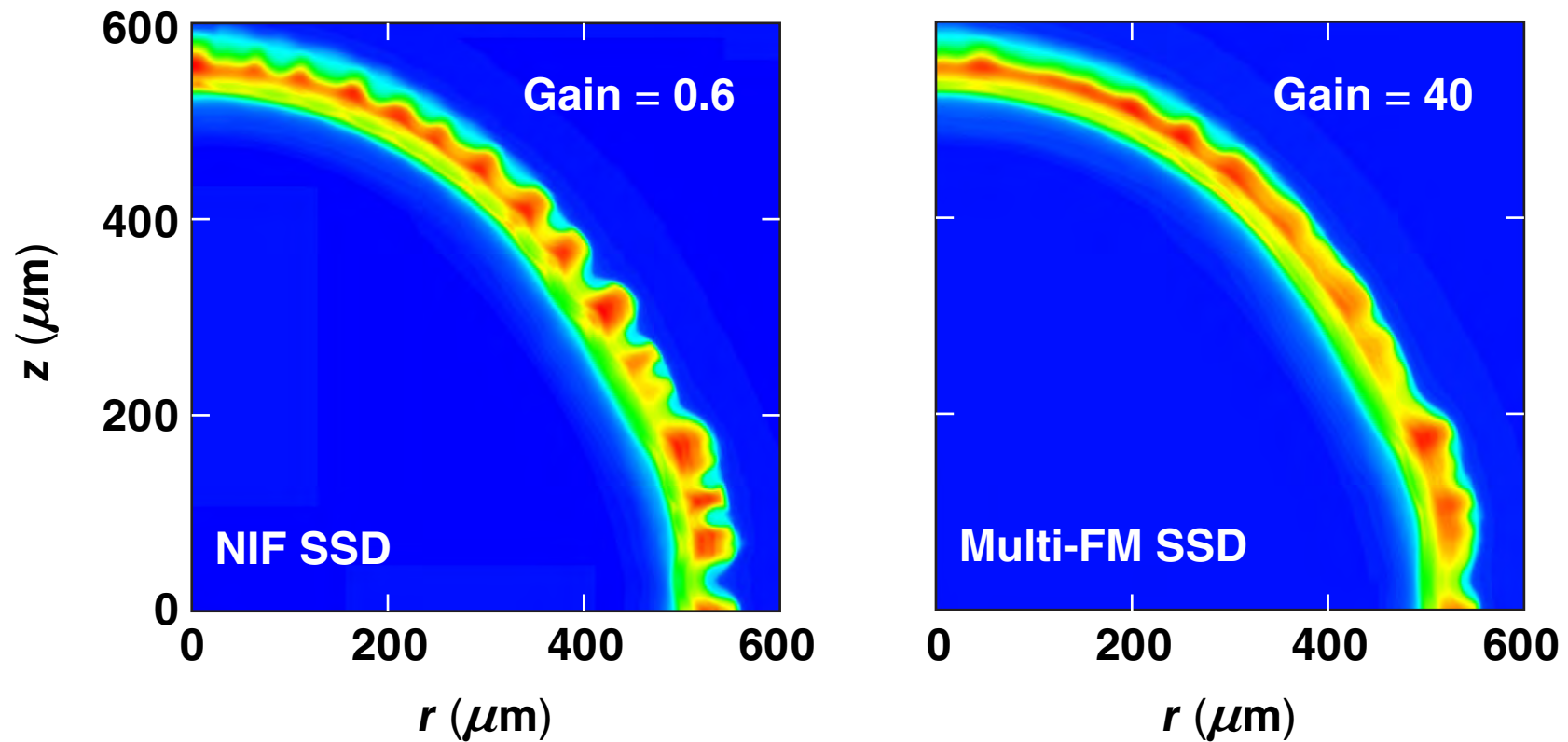
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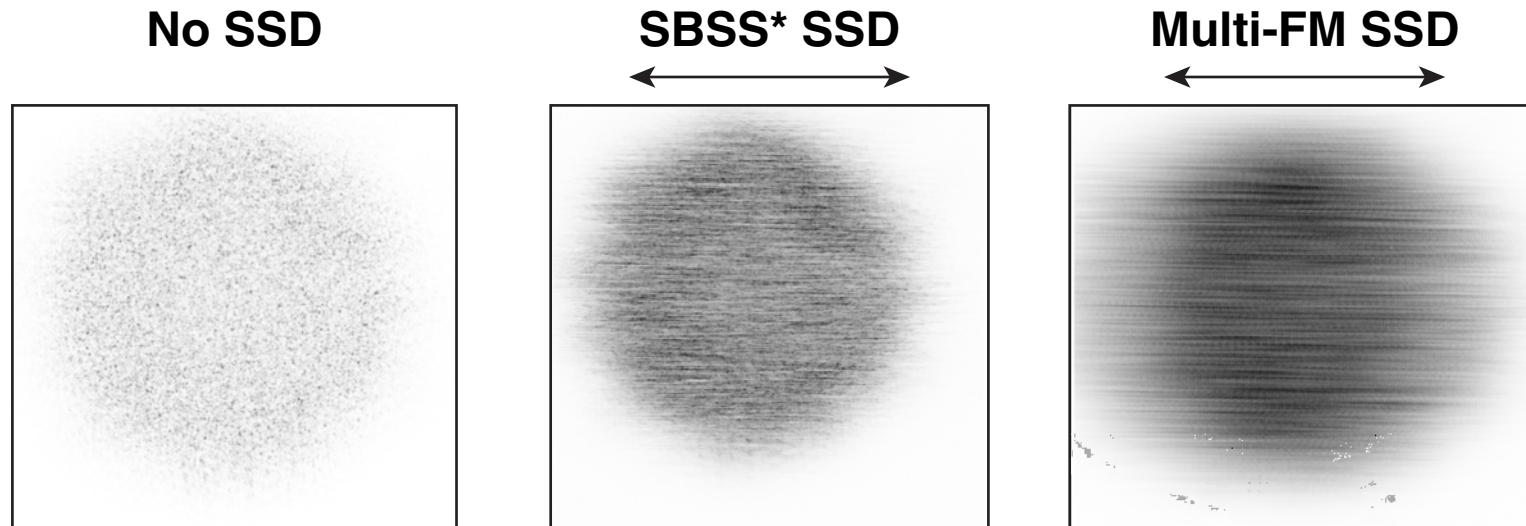
**M. Hohenberger, J. A. Marozas, M. J. Bonino, D. Canning, T. J. B. Collins,  
T. J. Kessler, B. E. Kruschwitz, P. W. McKenty, D. D. Meyerhofer,  
T. C. Sangster, and J. D. Zuegel**

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



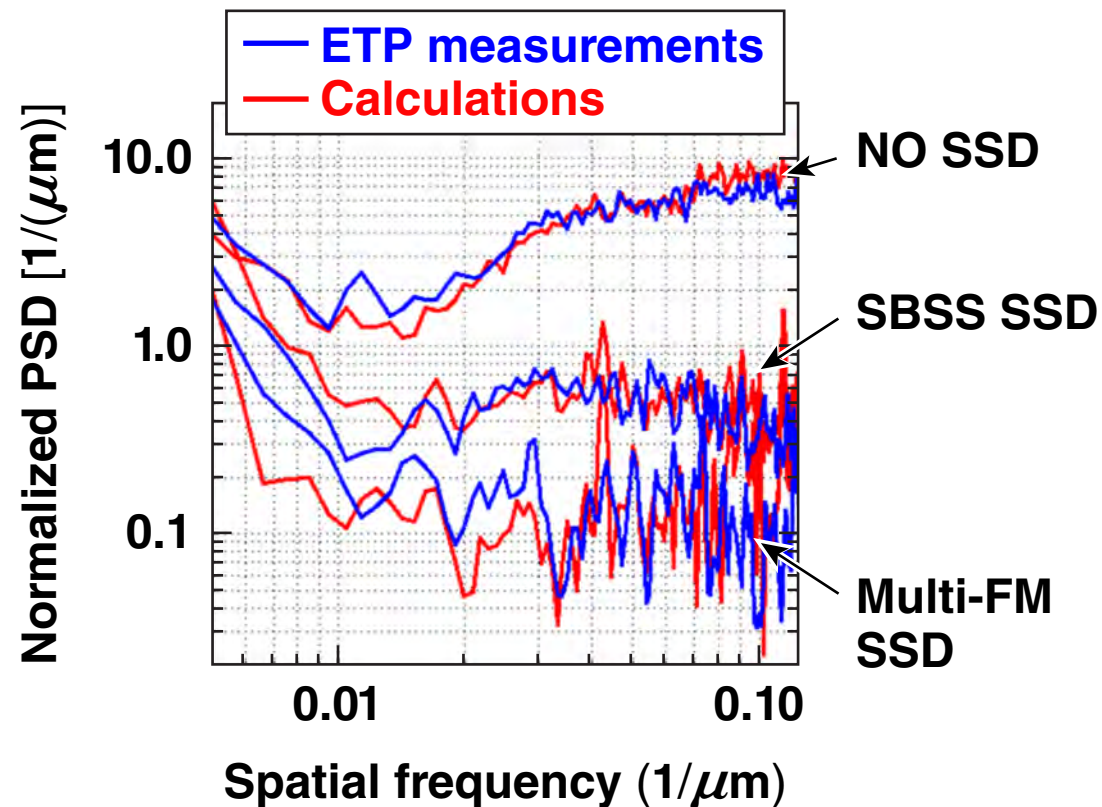
# High-magnification ETP measurements have been taken on OMEGA EP



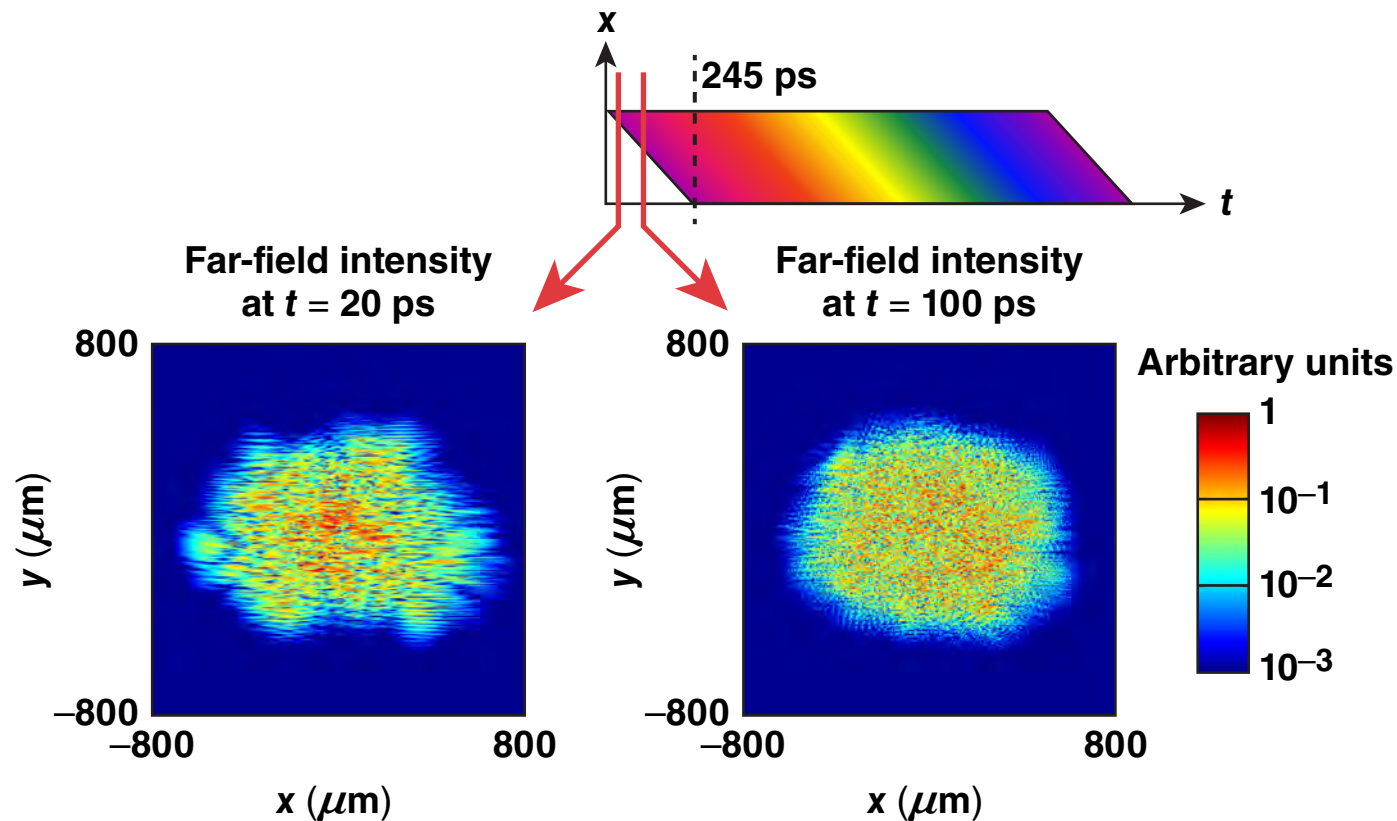
- SBSS SSD on OMEGA EP uses one phase modulator with 0.1 THz of UV bandwidth
- Multi-FM SSD uses three phase modulators with 0.5 THz of total UV bandwidth

# High-magnification OMEGA EP ETP measurements are in agreement with the theoretical predictions\*

ETP measurements versus simulations

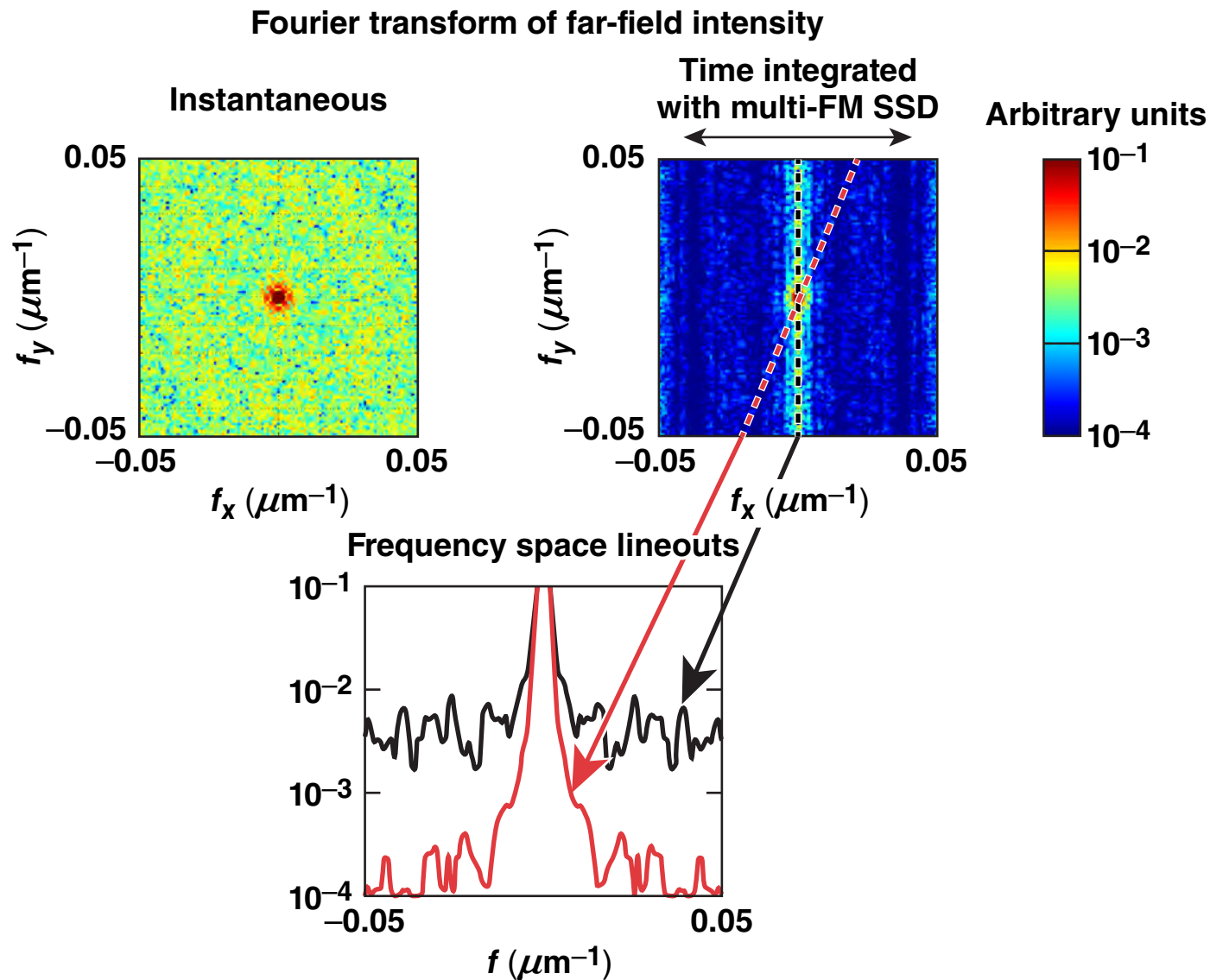


# Calculated instantaneous far-field spots are used in DRACO to model the effects of speckle and SSD in OMEGA EP Rayleigh–Taylor (RT) imprint experiments



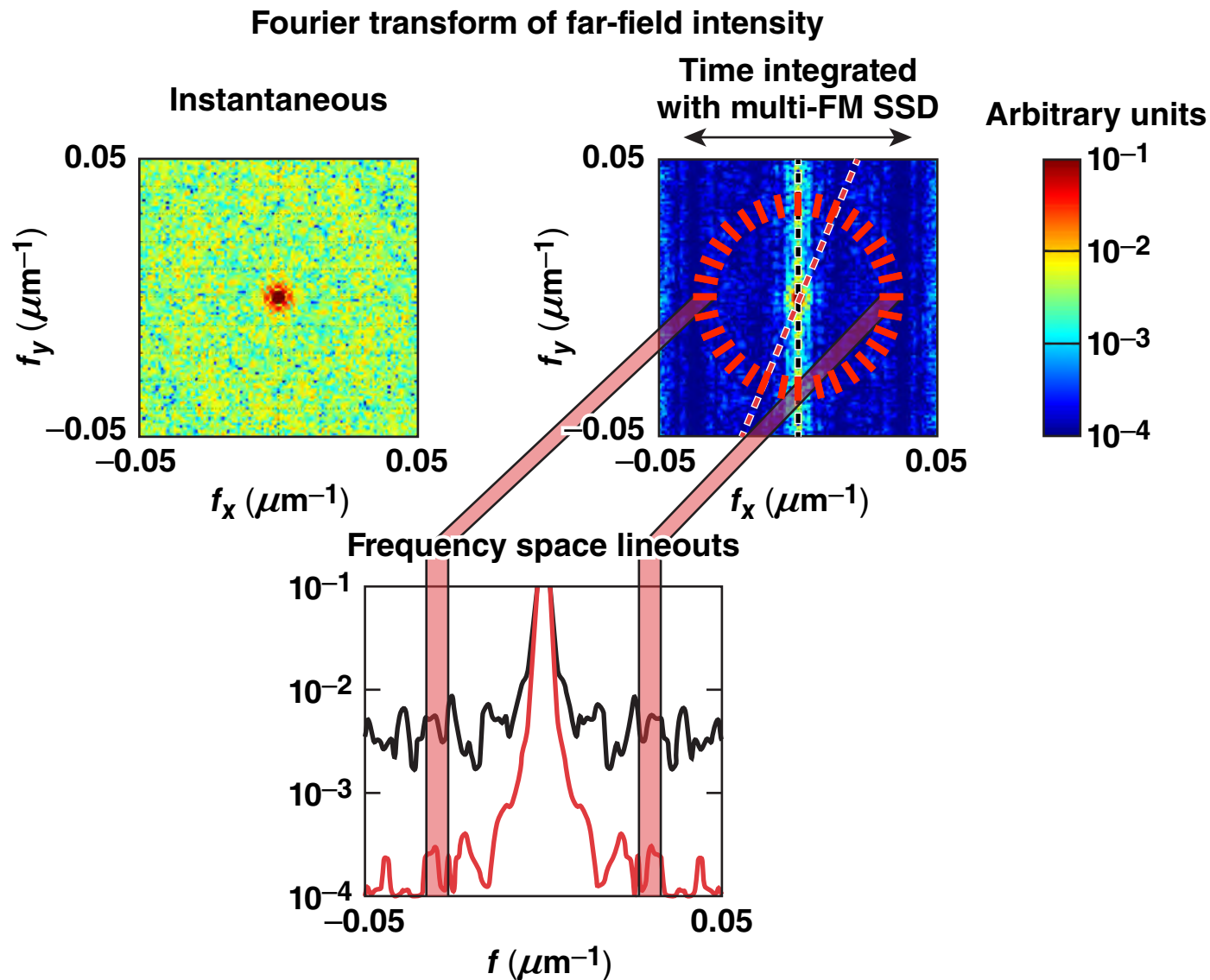
- Speckle pattern changes in time

# Radial slices in the Fourier space of the far-field intensity are used to model 1-D SSD with 2-D DRACO

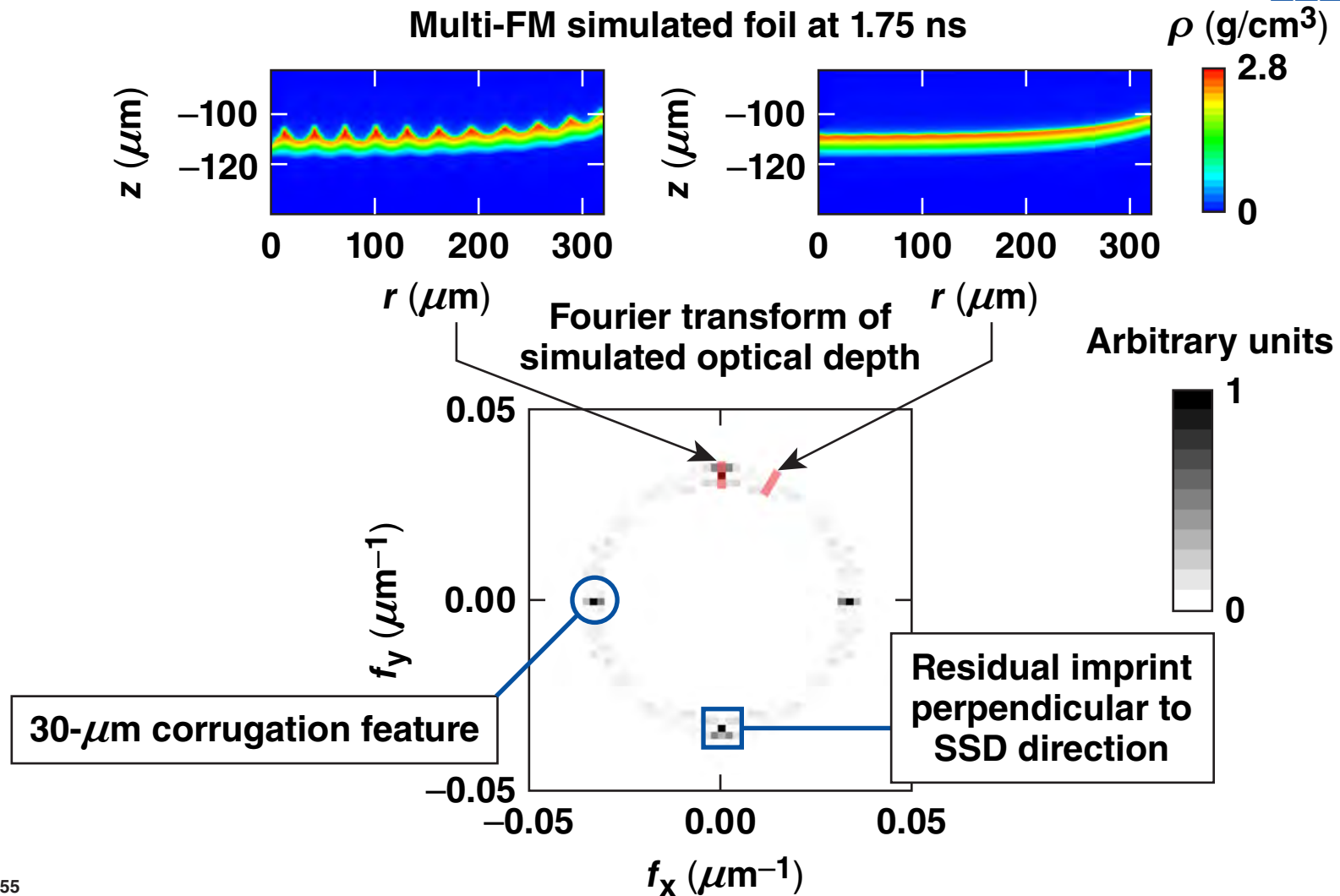




# Radial slices in the Fourier space of the far-field intensity are used to model 1-D SSD with 2-D DRACO

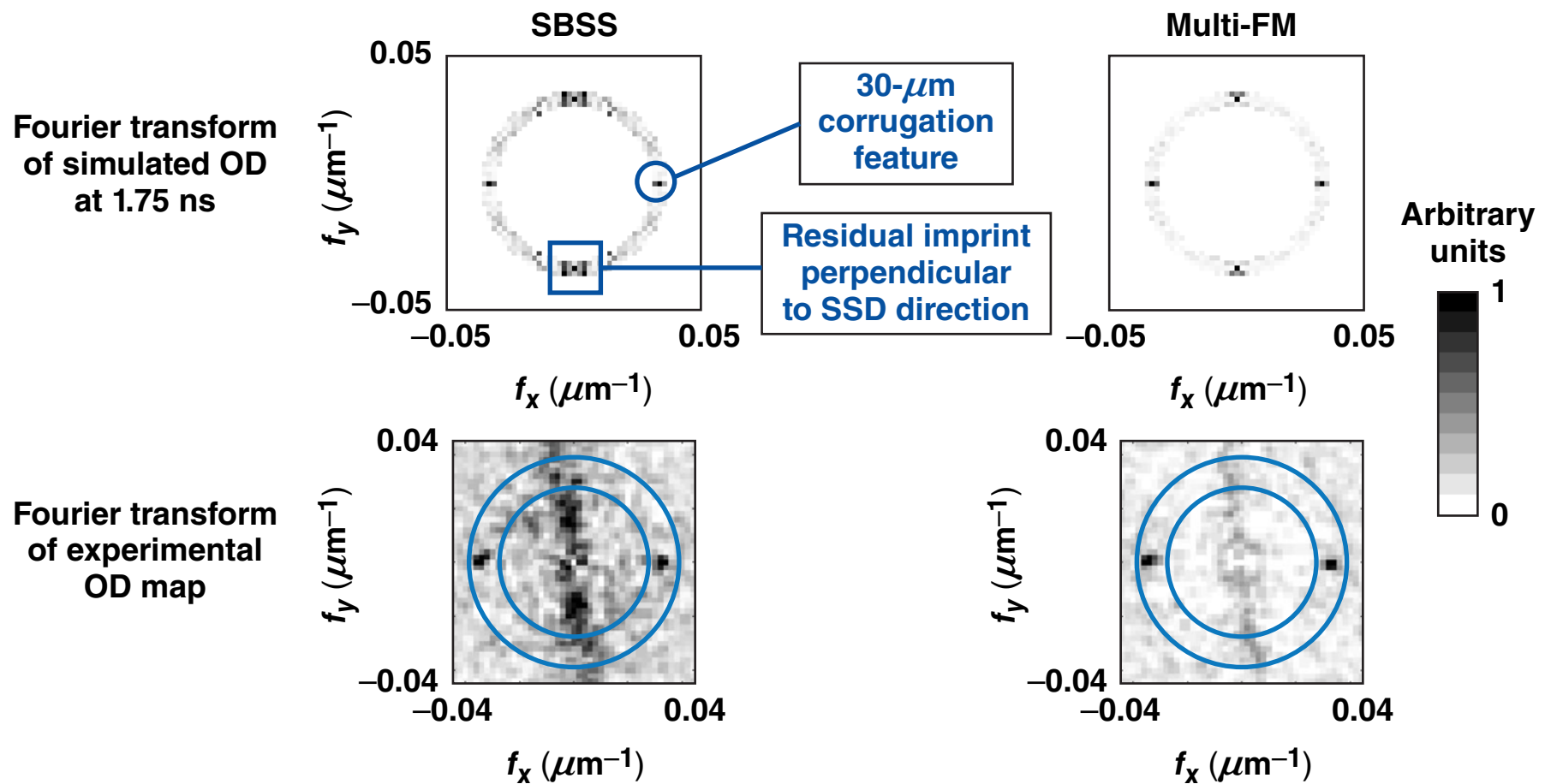


# DRACO simulations reproduce the directionality in optical-depth modulations indicated by far-field laser-spot simulations



TC11055

# Simulations also reproduce imprint and corrugation features seen in the Fourier space of the experimental optical-depth (OD) maps



# One-dimensional multi-FM smoothing by spectral dispersion (SSD) modeling has been validated with OMEGA EP experiments



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