

SU update: Best estimate

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November 3, 2025

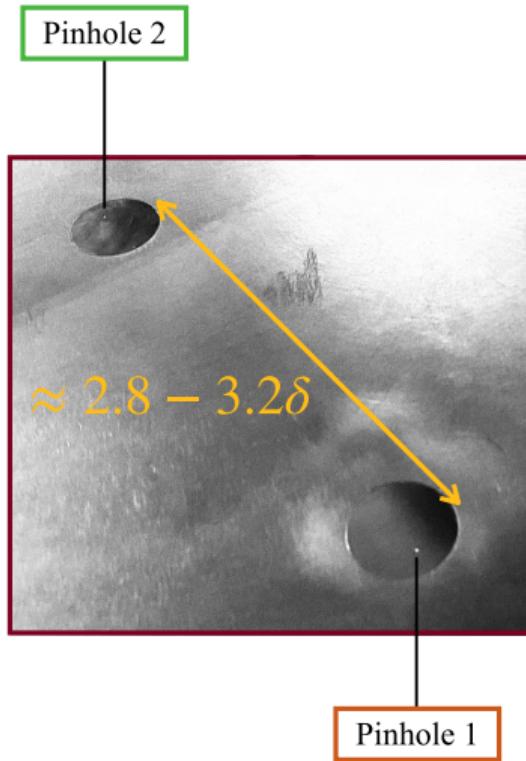
Thanks to DARPA for funding this work.

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- $\delta \approx 0.035[\text{m}]$, $U_e \approx 14[\text{m/s}]$

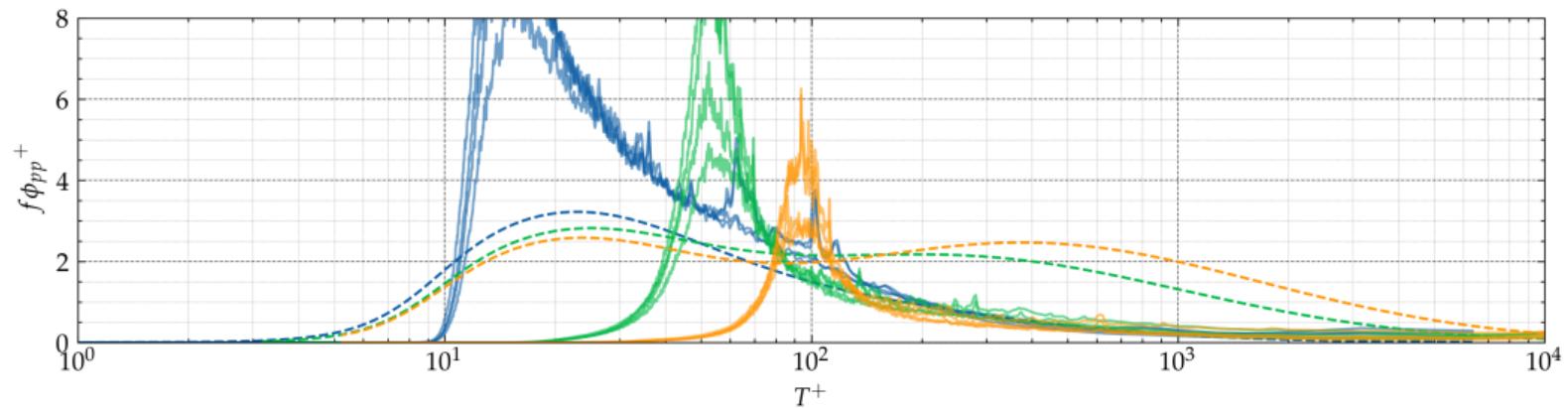
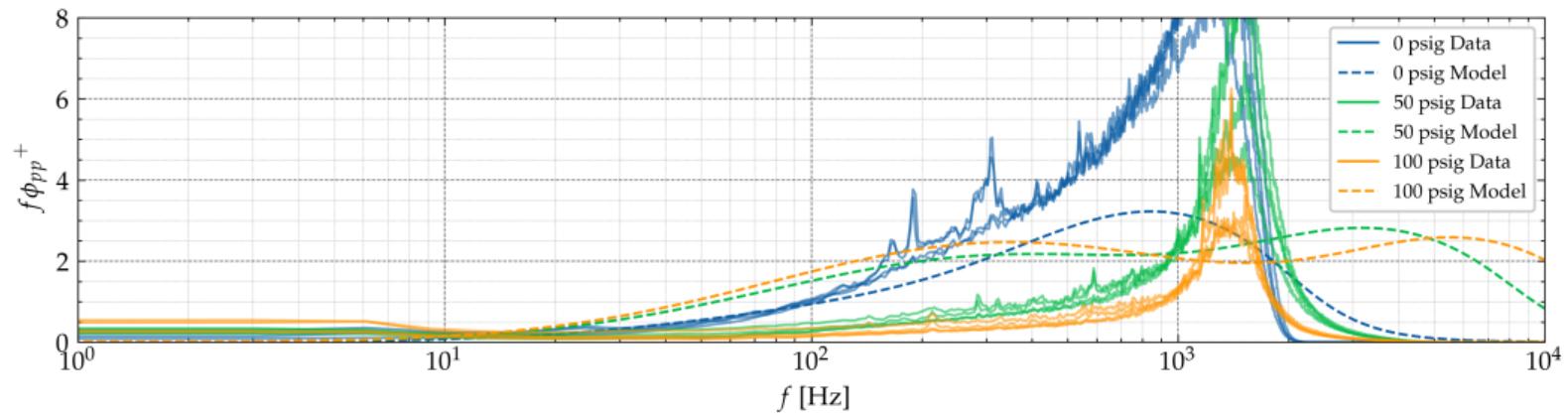
| Pressure (psig) | 0 | 50 | 100 |
|-----------------------------|-----------------------|-----------------------|-----------------------|
| $u_\tau [\text{m/s}]$ | 0.537 | 0.522 | 0.506 |
| $\nu / u_\tau [\text{m}]$ | 28×10^{-6} | 6.6×10^{-6} | 3.8×10^{-6} |
| $\nu [\text{m}^2/\text{s}]$ | 14.9×10^{-6} | 3.42×10^{-6} | 1.93×10^{-6} |
| Re_τ | 1 263 | 5 340 | 9 178 |
| ROI: $f [\text{Hz}]$ | 100–1 000 | 100–1 000 | 100–1 000 |
| ROI: T^+ | 200–20 | 800–80 | 1 300–130 |

Pinhole spacings

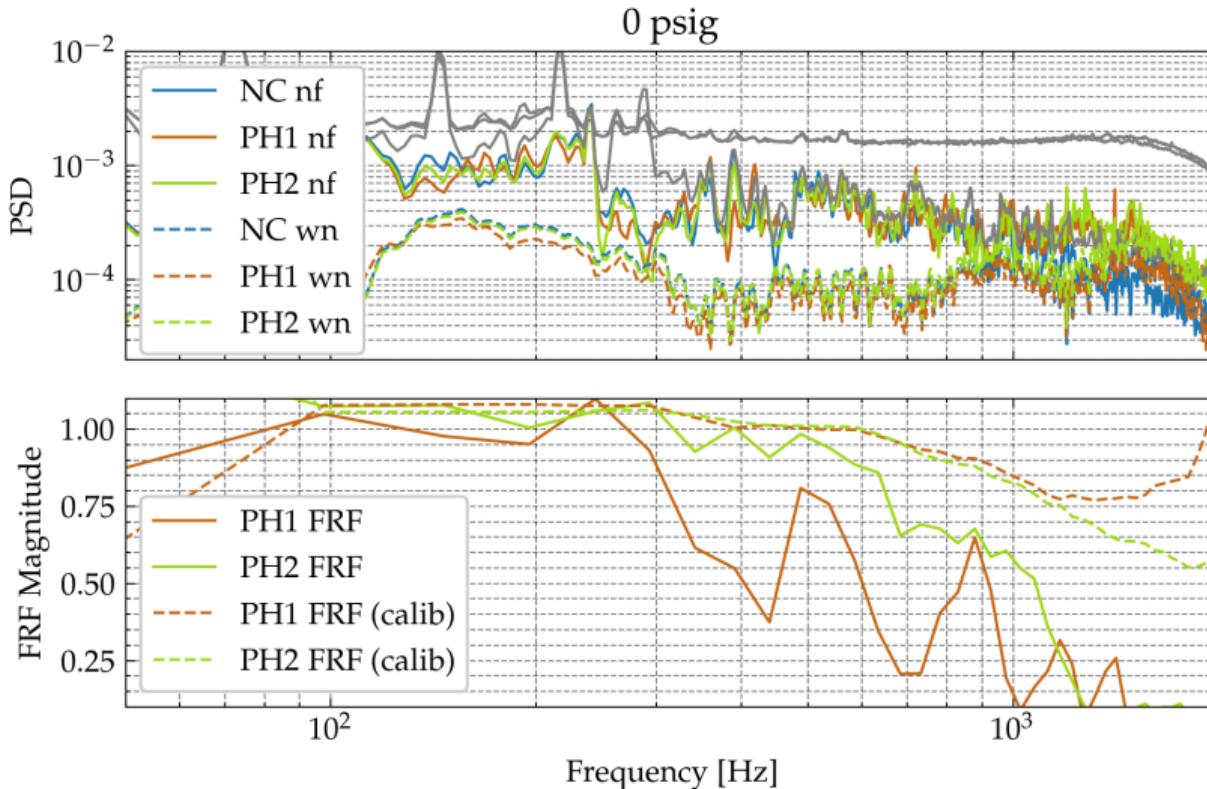


- ▶ We have two-point measurements at two streamwise spacings: 3.2δ and 2.8δ
- ▶ Herein, we refer to these as 'far' and 'close' spacings

FS noise rejected



Measurements look great, but the final result is very sensitive to the calibration



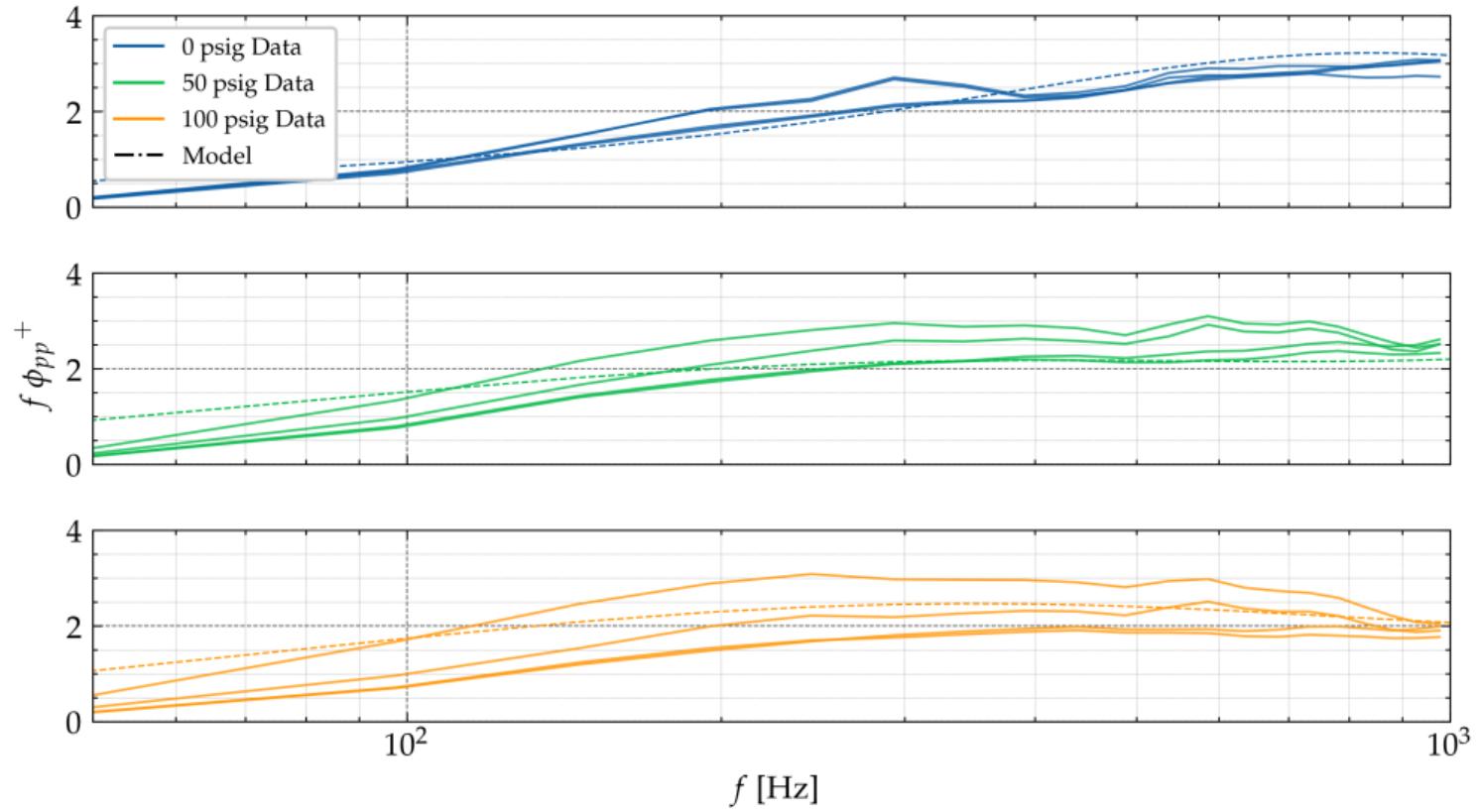
We use an LEM

$$|H_{\text{cal}}| = |H_{\text{wn}}| \times S \quad (1)$$

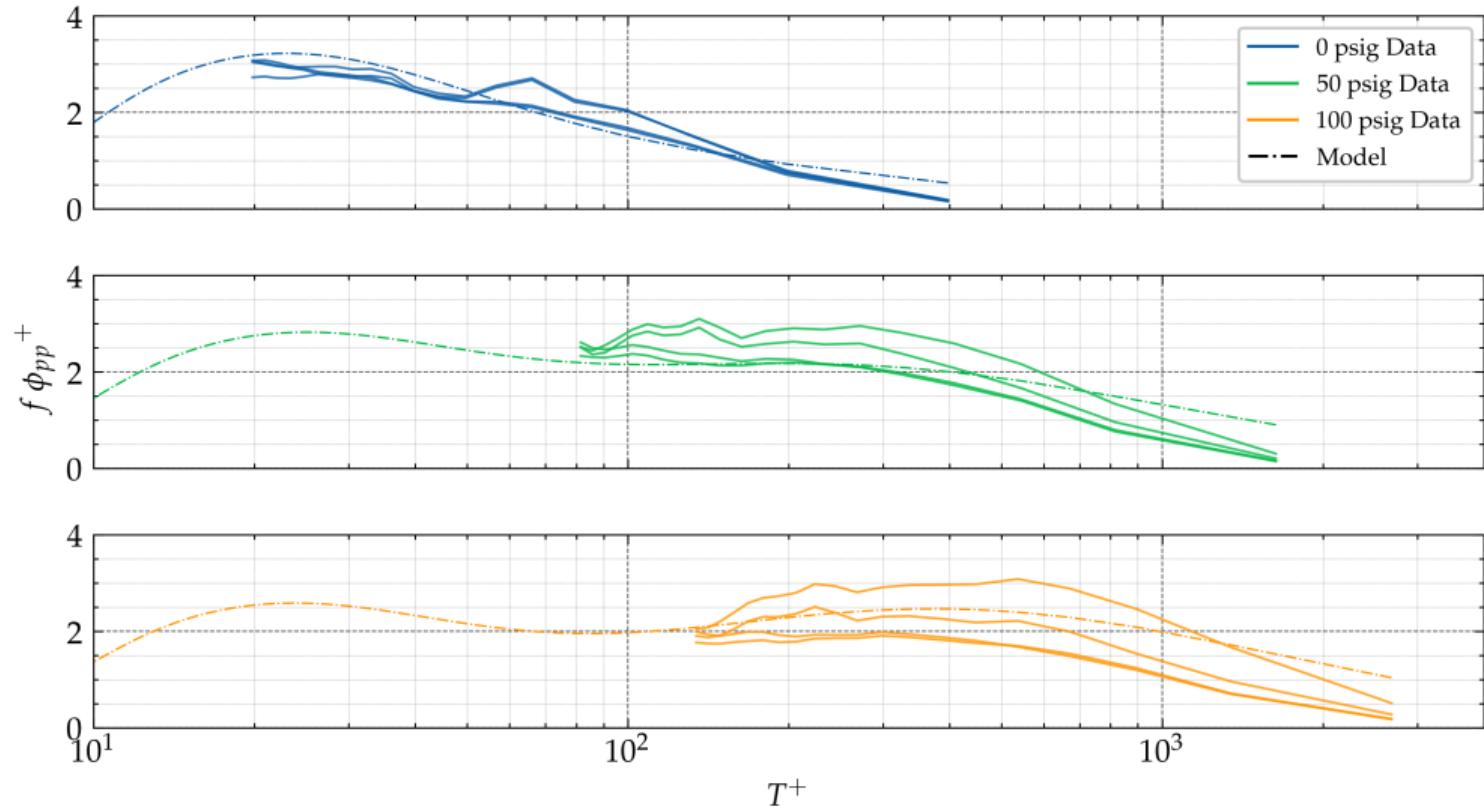
$$20 \log S = c_0 + a 20 \log f + b 20 \log \frac{\rho}{\rho_{\text{ref}}} + \frac{f}{f_{\text{ref}}} \quad (2)$$

- ▶ Mass scaling and compliance term
- ▶ Fit parameters a , b , c_0 , and f_{ref} to calibration data at each pressure
 - ▶ c_0 and b do the work

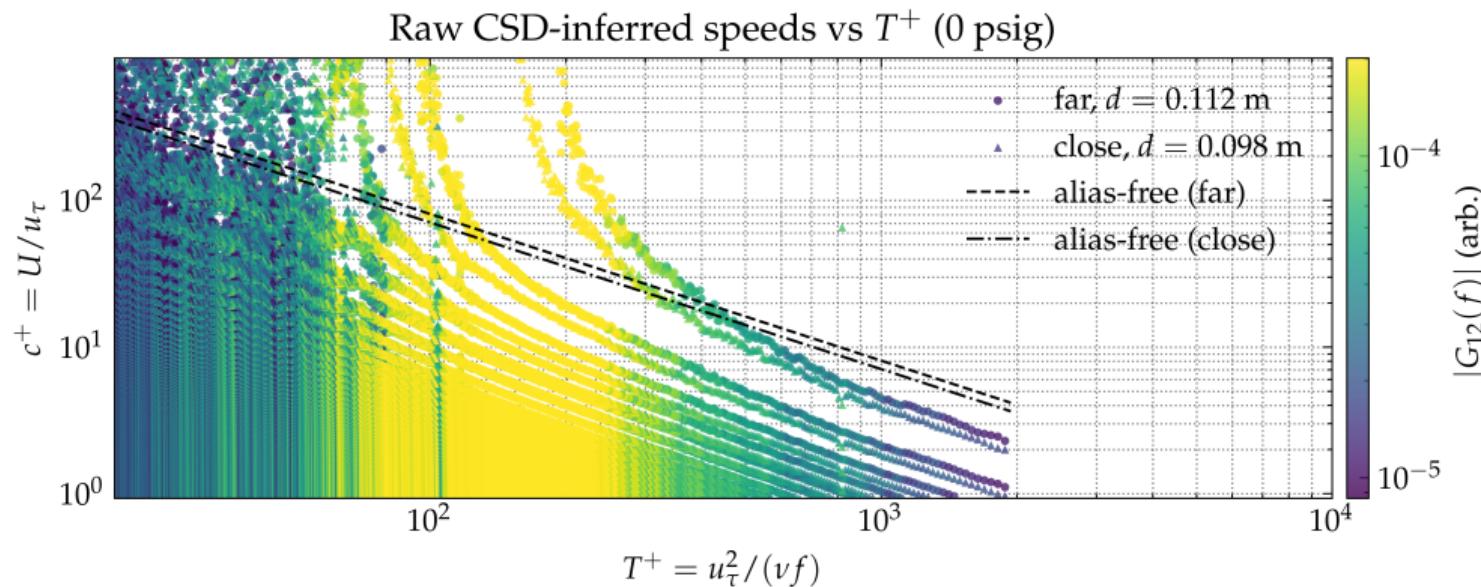
Final spectra in ROI



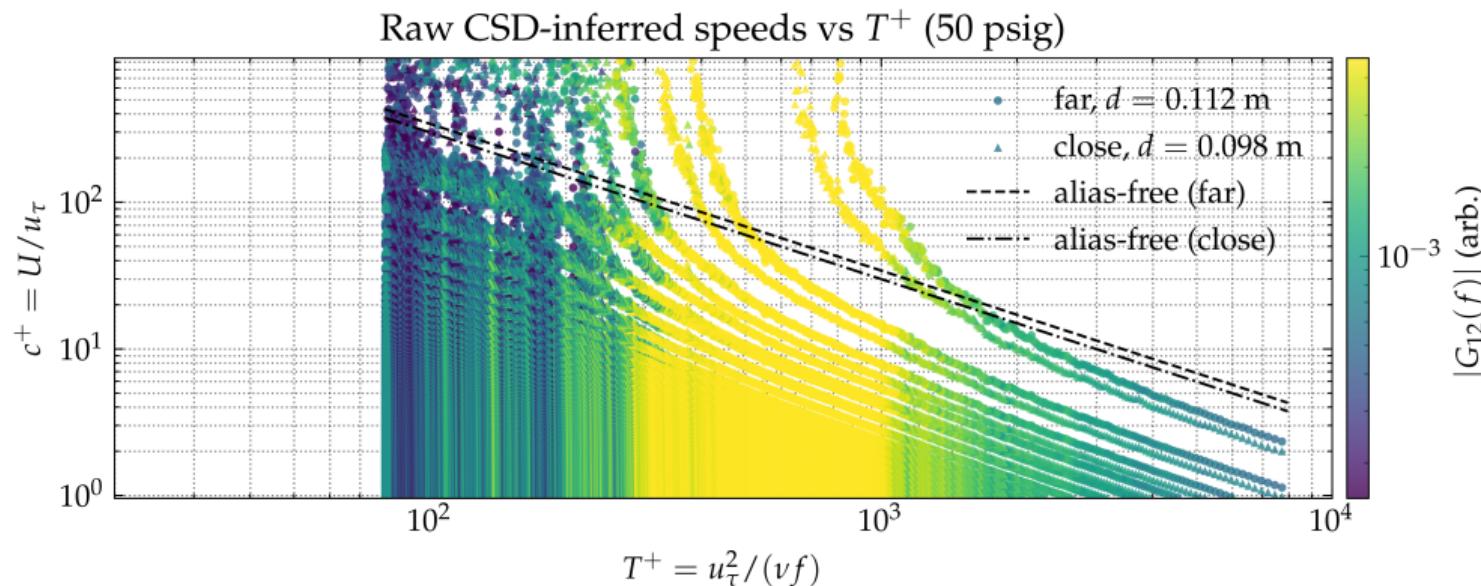
Final spectra in ROI



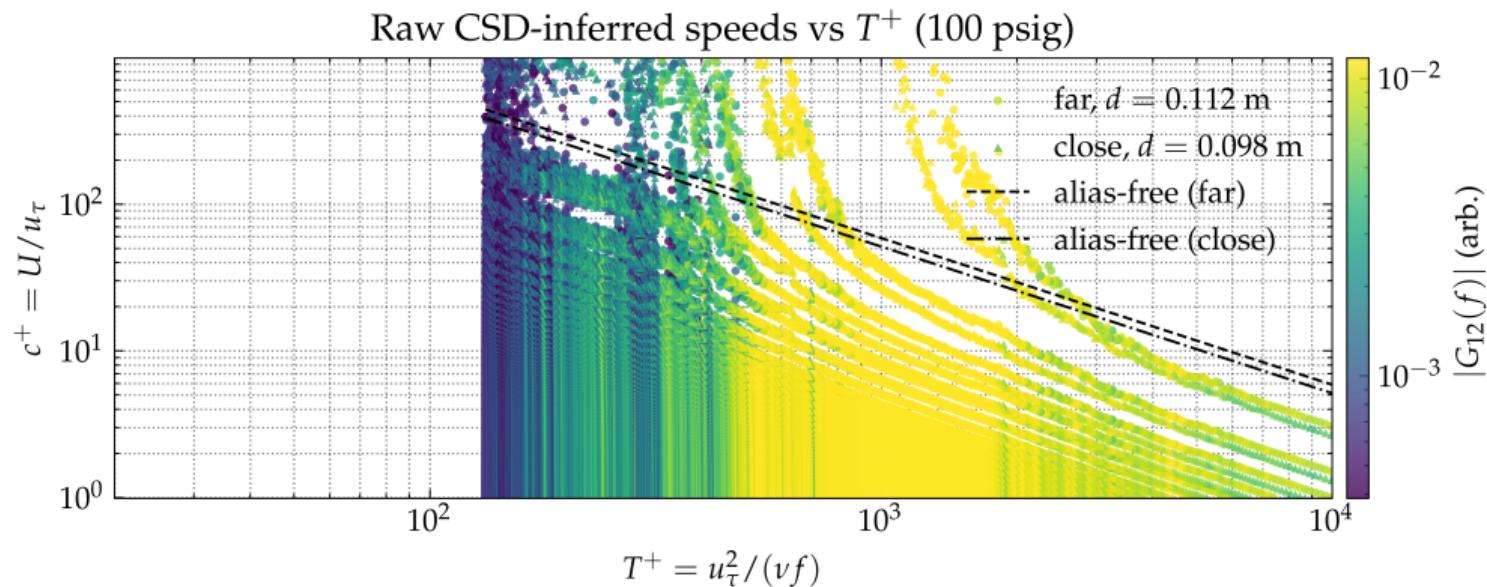
Speeds



Speeds



Speeds



Shear

