Hosing Analysis – FFT of Simulation Data

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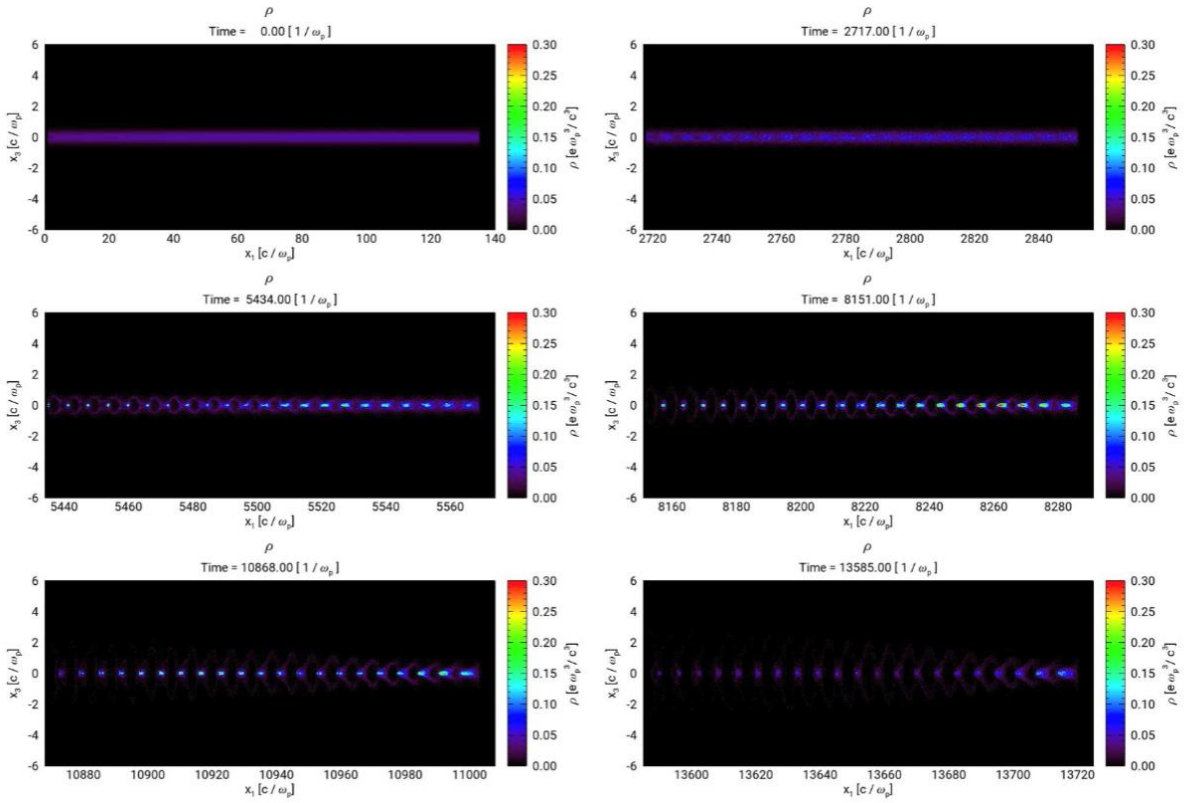
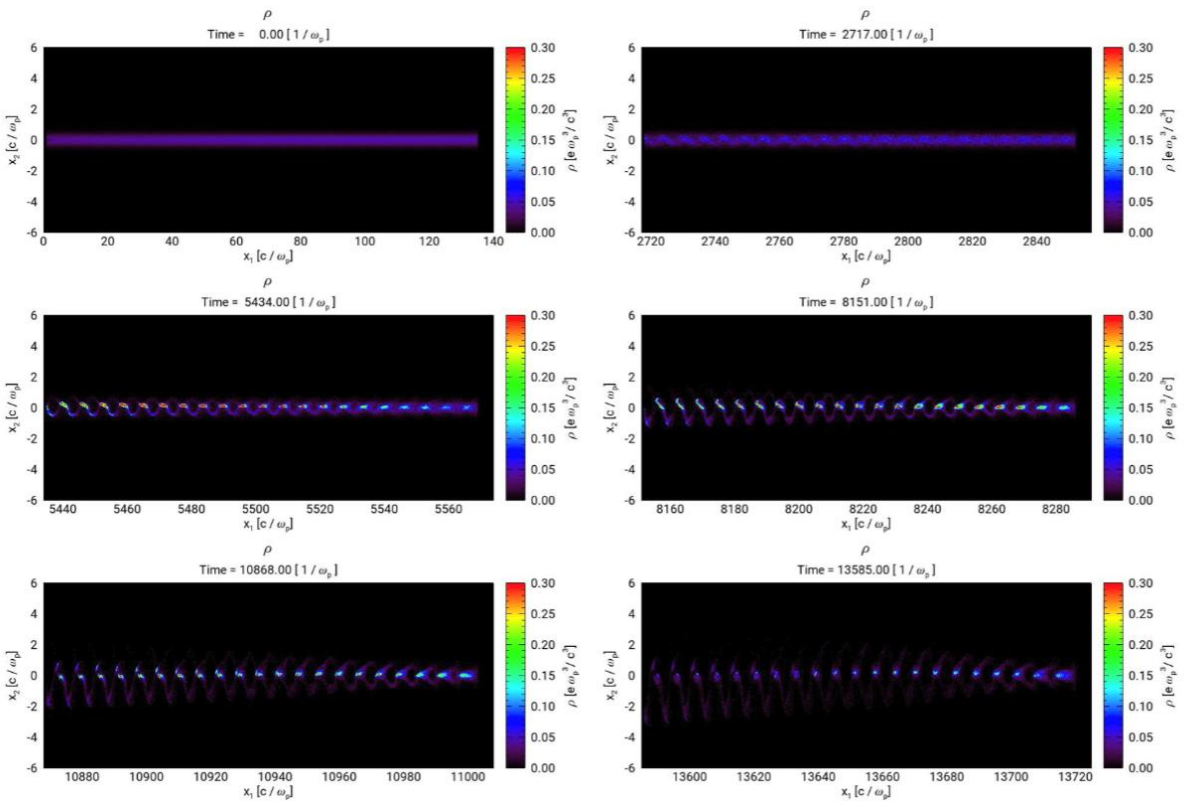
31.01.2019

1. Propagation through Plasma

SMI-plane

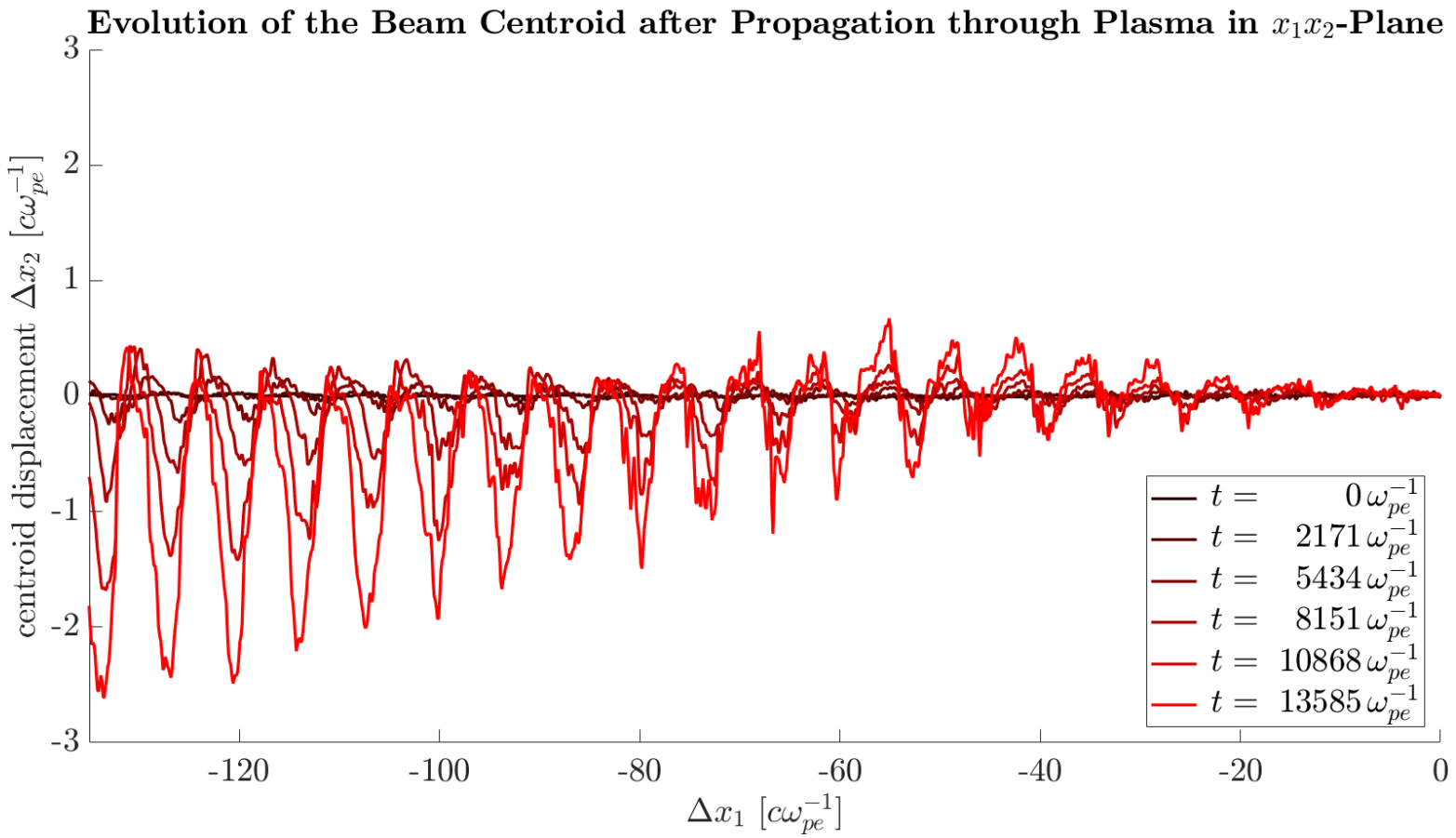


HI-plane



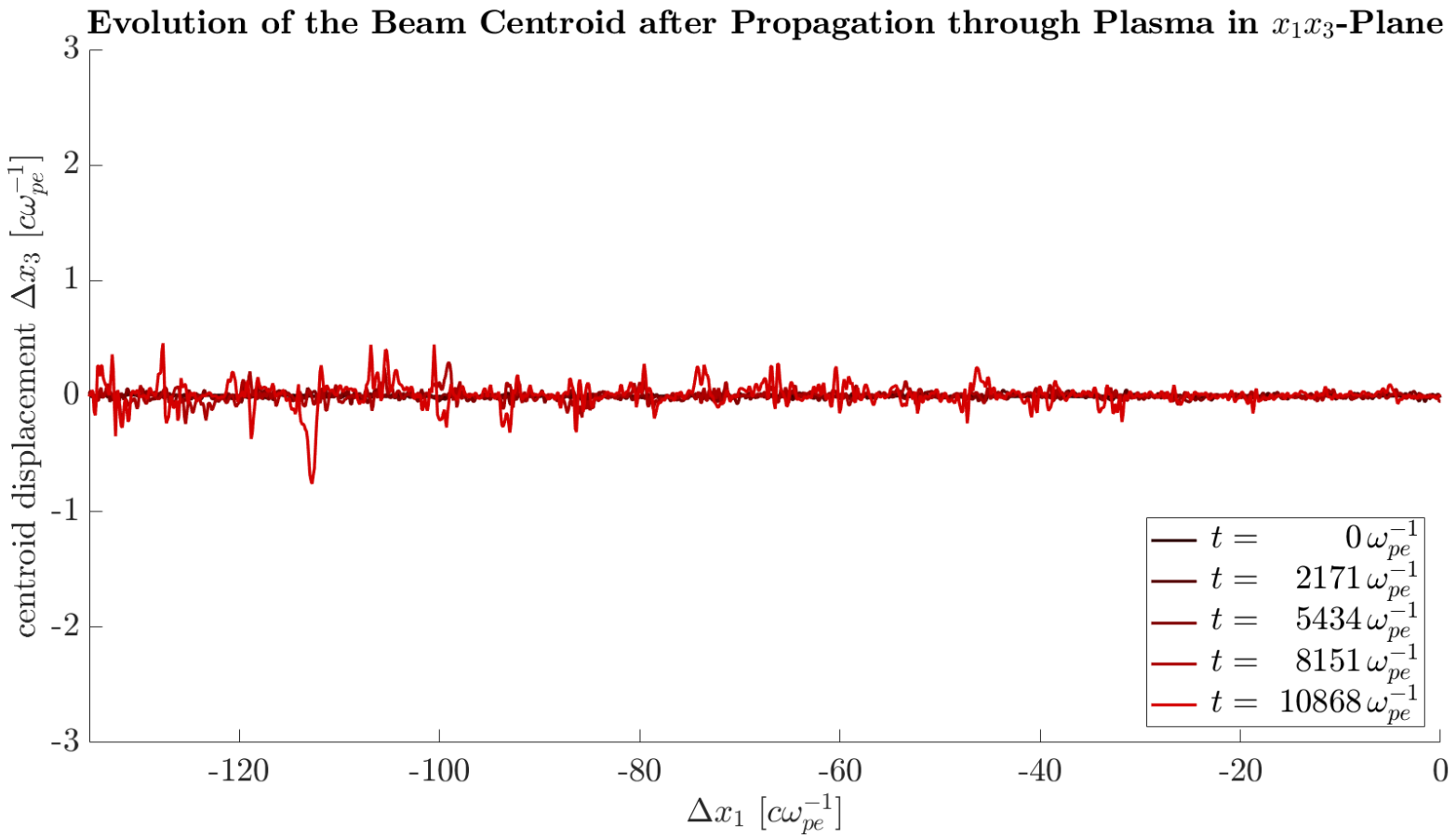
1. Propagation through plasma

Hosing plane:



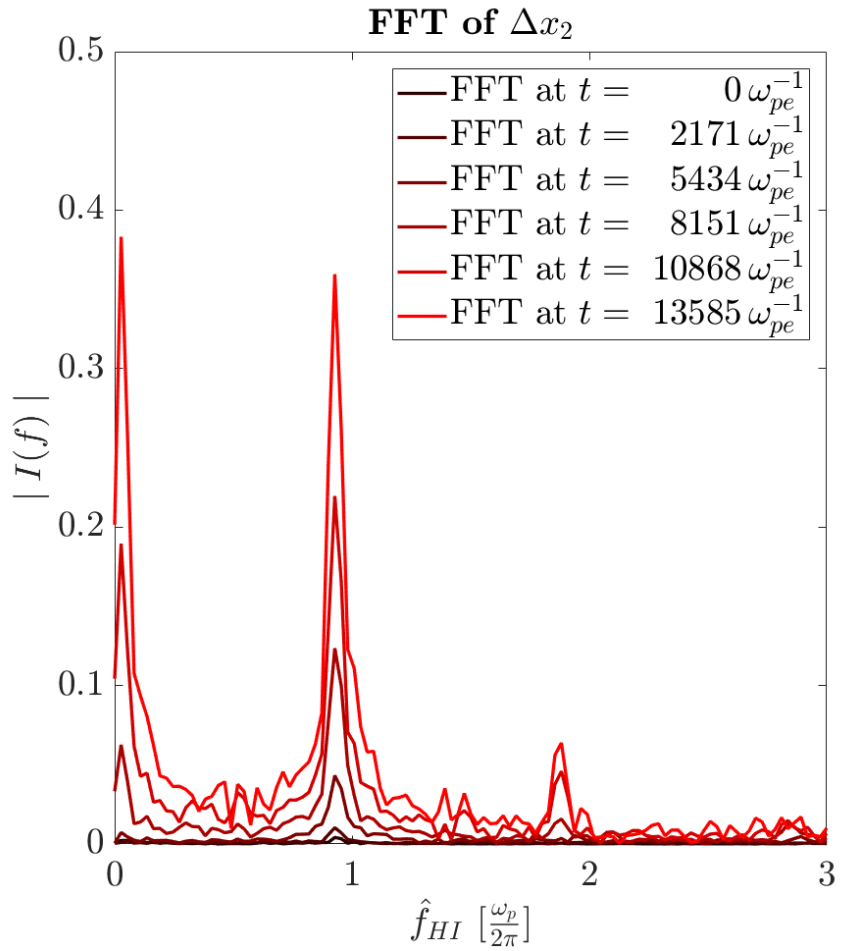
1. Propagation through plasma

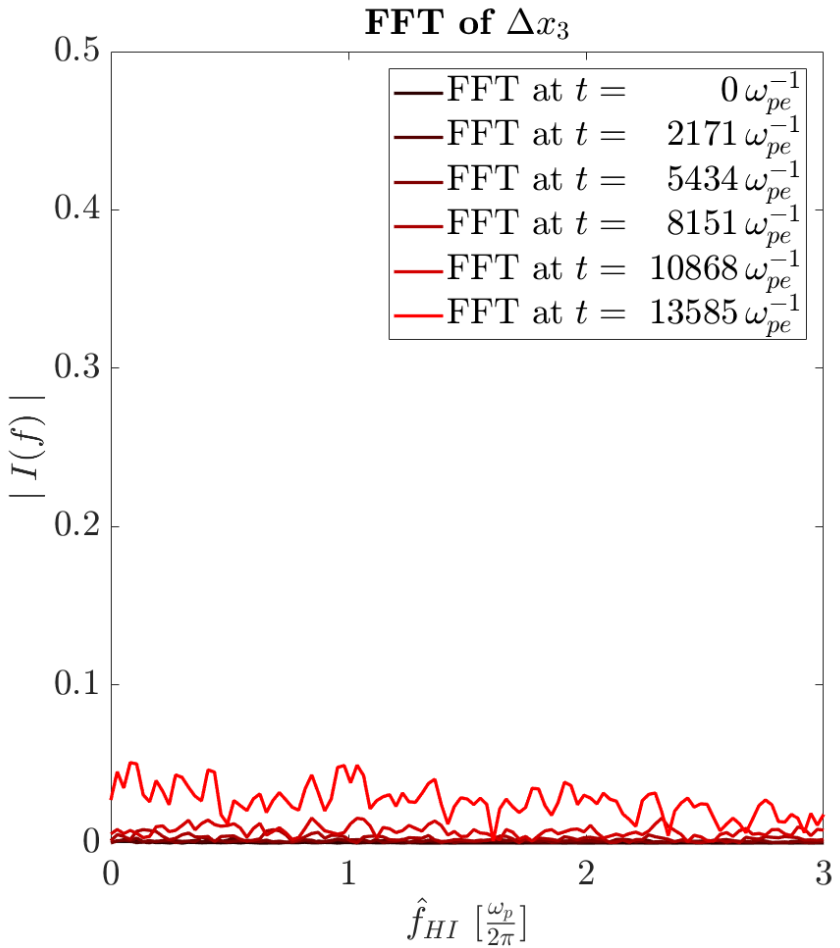
SMI-plane:



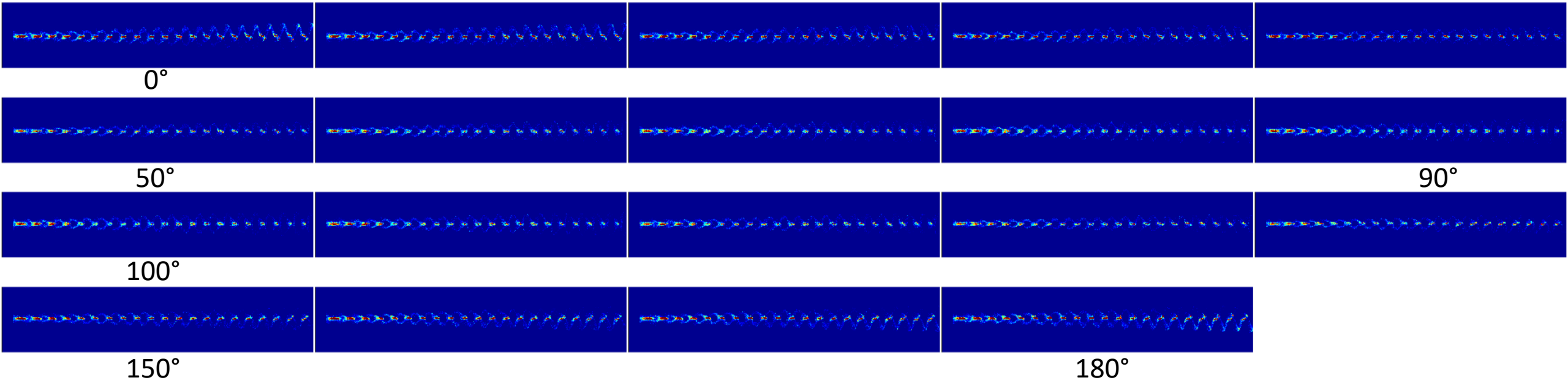
1. Propagation through plasma

FFT of centroid position:

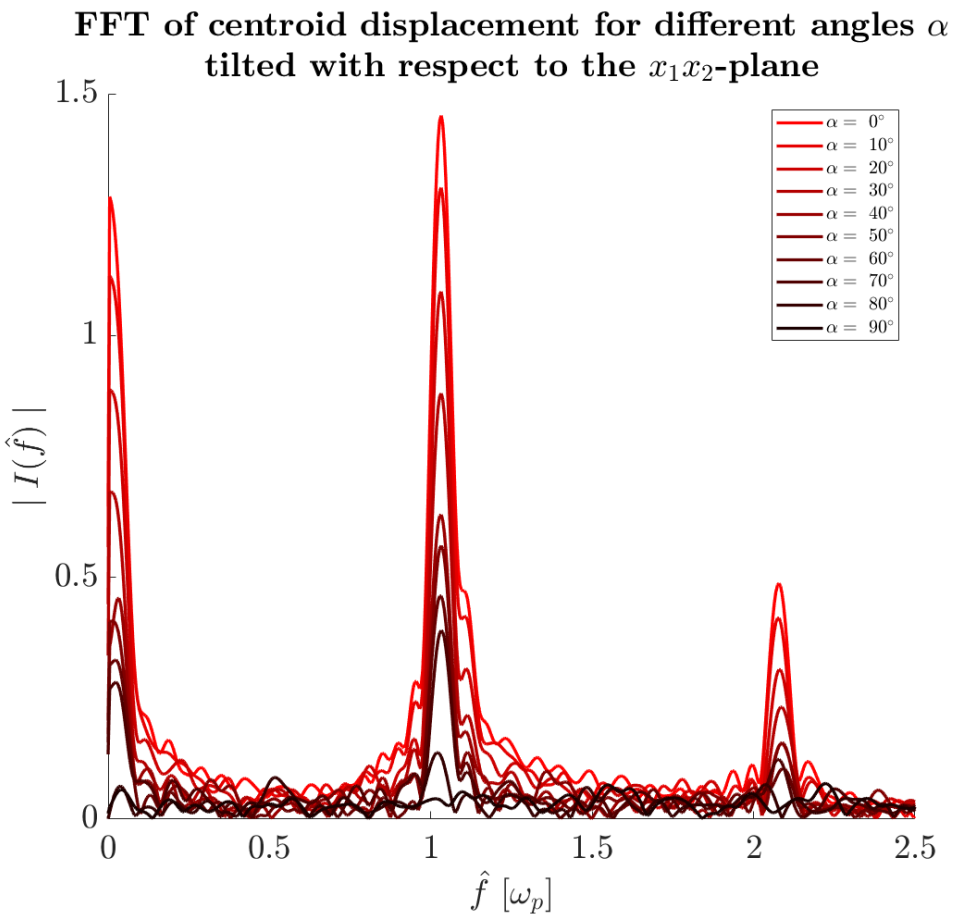


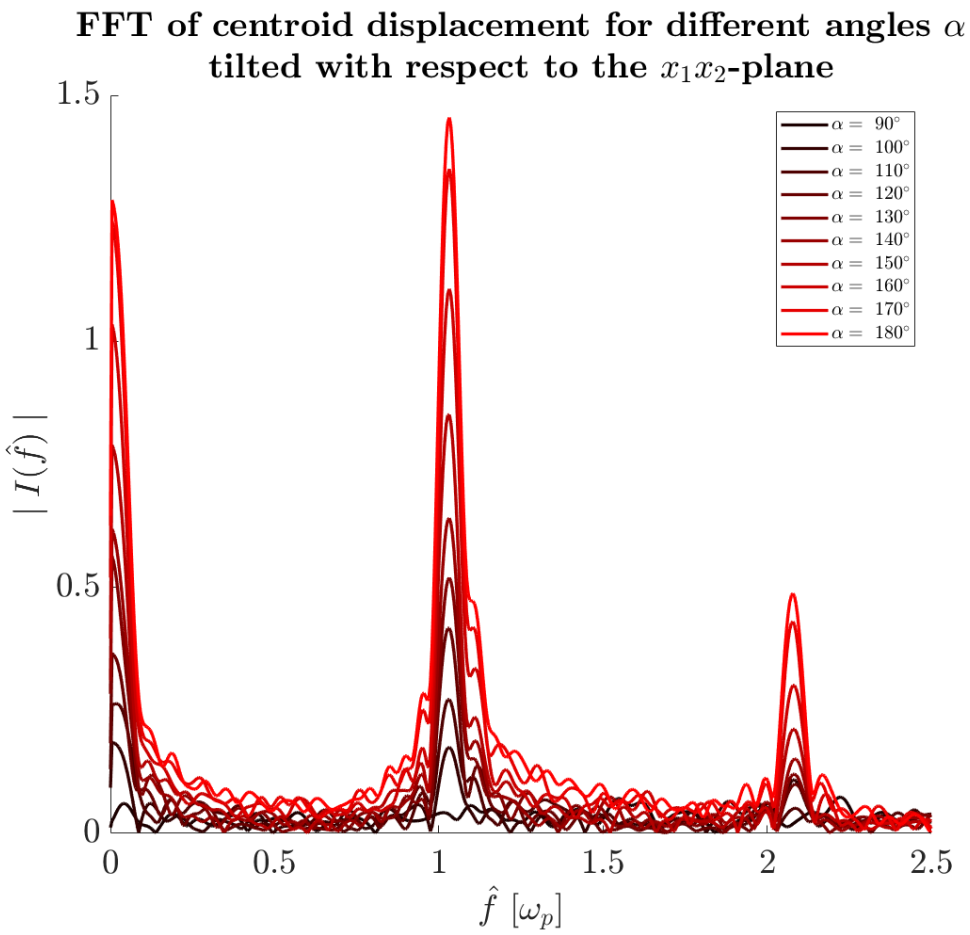


2. Angle scan

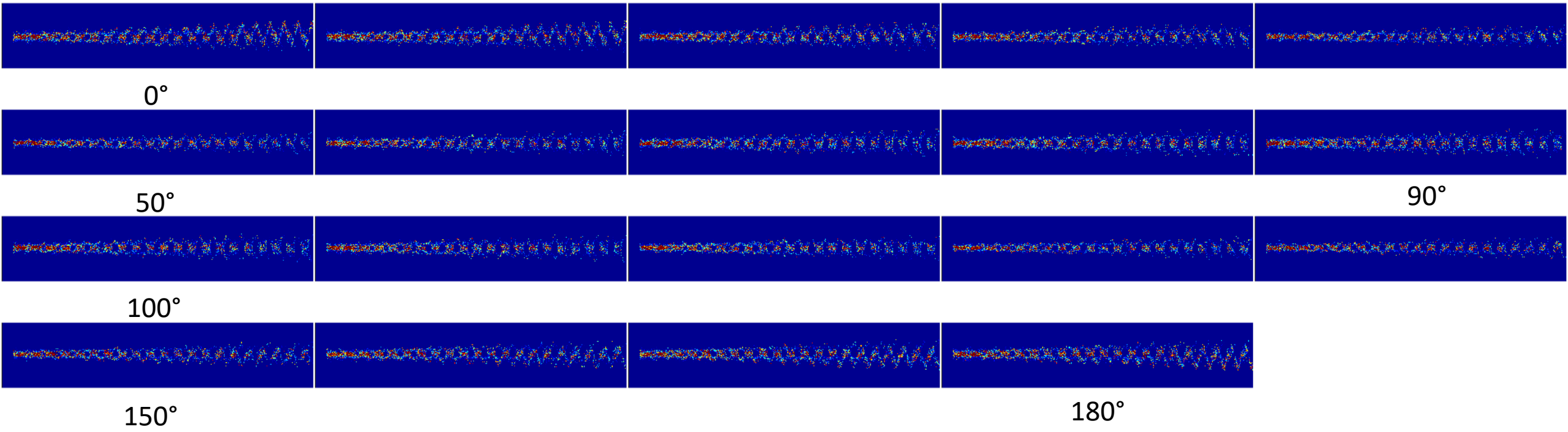


2. Angle scan

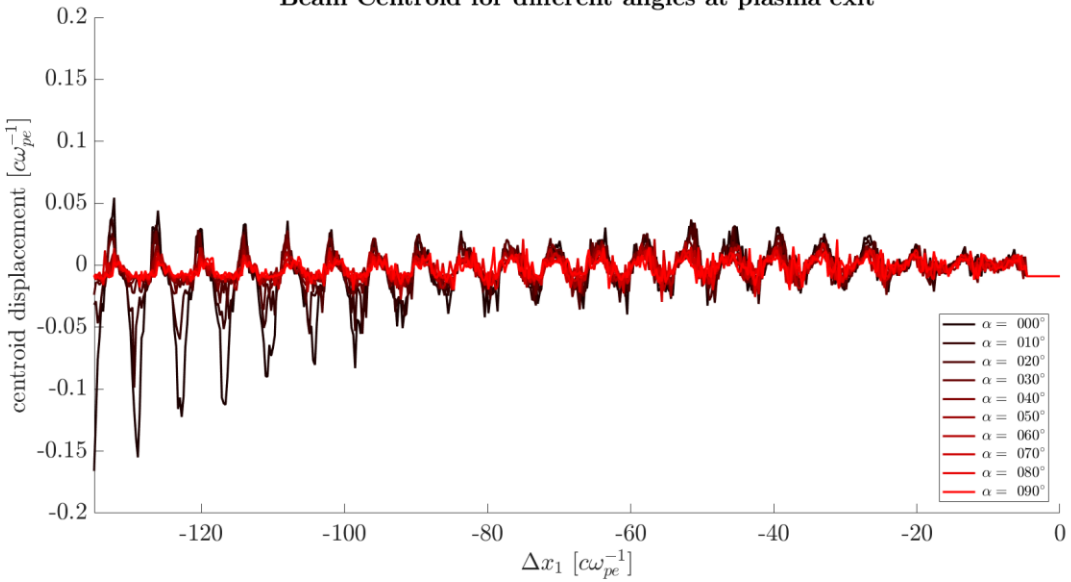

FFT of centroid displacement for different angles α tilted with respect to the x_1x_2-plane
$\alpha = 0°$
$\alpha = 10°$
$\alpha = 20°$
$\alpha = 30°$
$\alpha = 40°$
$\alpha = 50°$
$\alpha = 60°$
$\alpha = 70°$
$\alpha = 80°$
$\alpha = 90°$
$|\, I(\hat{f})\,|$
$\hat{f}\ [\omega_p]$


FFT of centroid displacement for different angles α tilted with respect to the x_1x_2-plane
$\alpha = 90°$
$\alpha = 100°$
$\alpha = 110°$
$\alpha = 120°$
$\alpha = 130°$
$\alpha = 140°$
$\alpha = 150°$
$\alpha = 160°$
$\alpha = 170°$
$\alpha = 180°$
$|\, I(\hat{f})\,|$
$\hat{f}\ [\omega_p]$

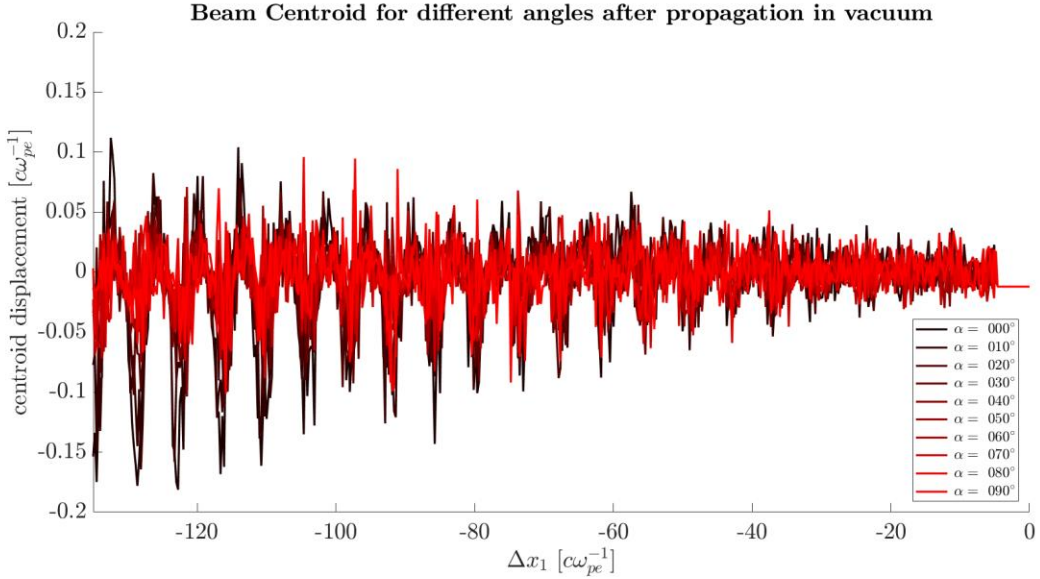
3. Angle scan (with propagation in vacuum)



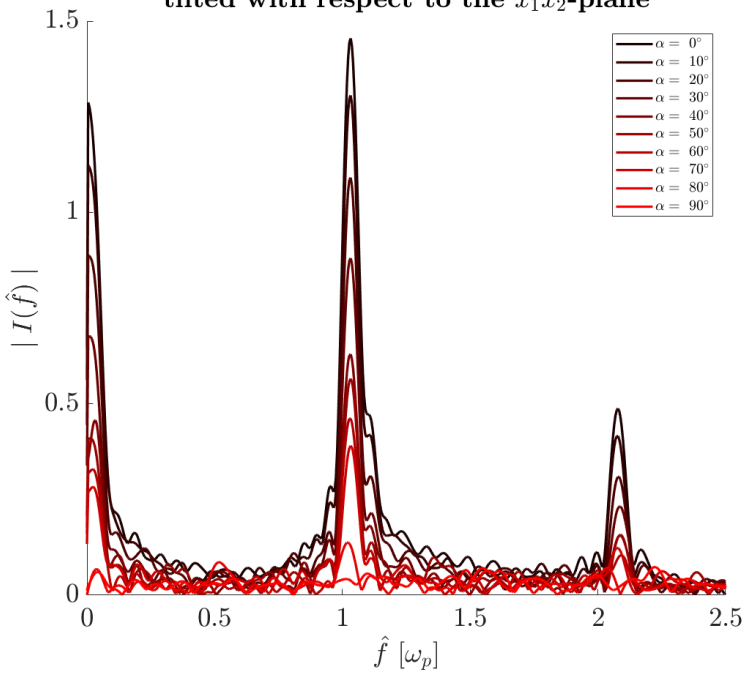
Beam Centroid for different angles at plasma exit



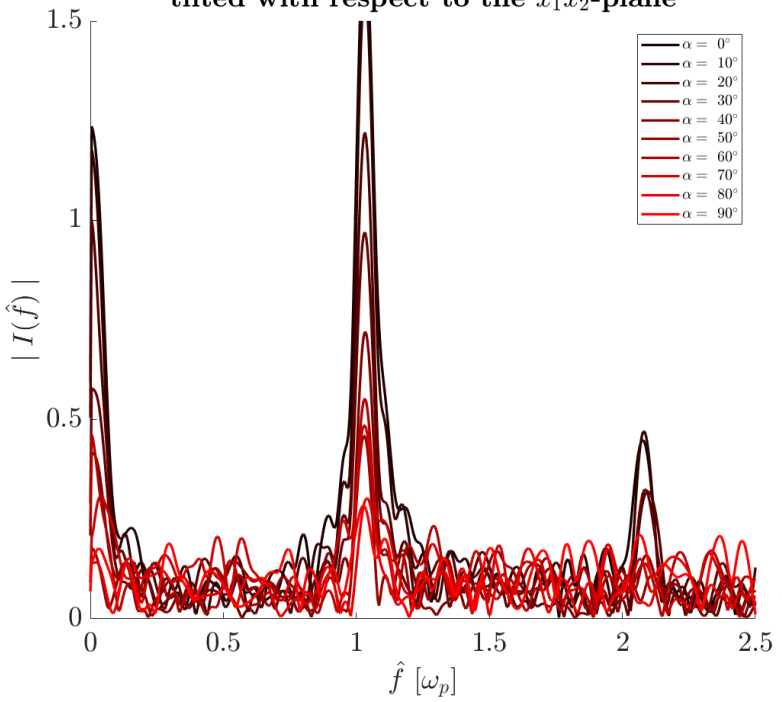
Beam Centroid for different angles after propagation in vacuum



FFT of centroid displacement for different angles α tilted with respect to the x_1x_2-plane

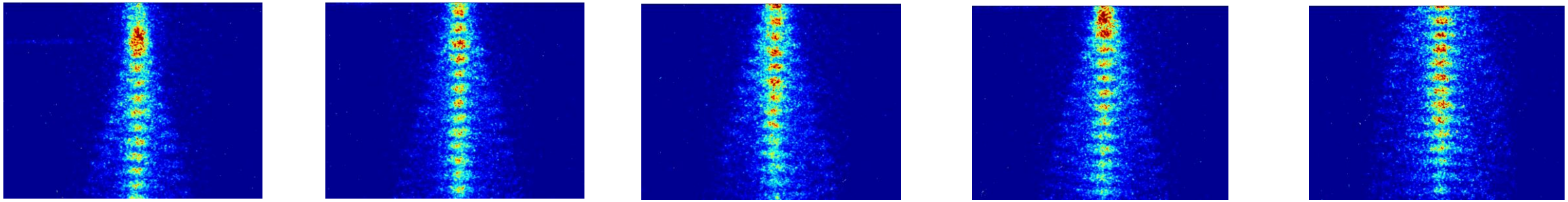


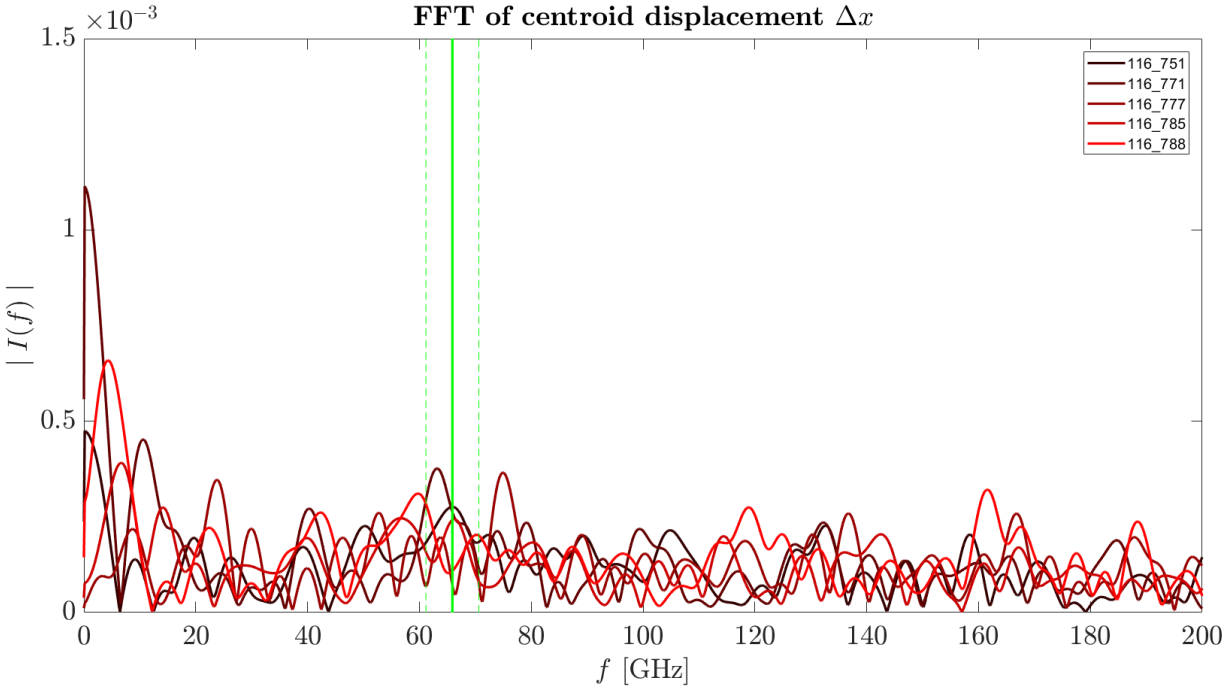
FFT of centroid displacement for different angles α tilted with respect to the x_1x_2-plane



Now look into Streak Images …

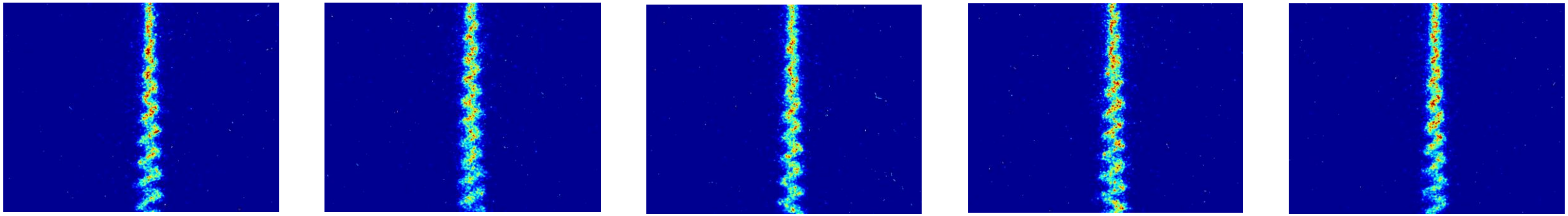
Events with SSM:

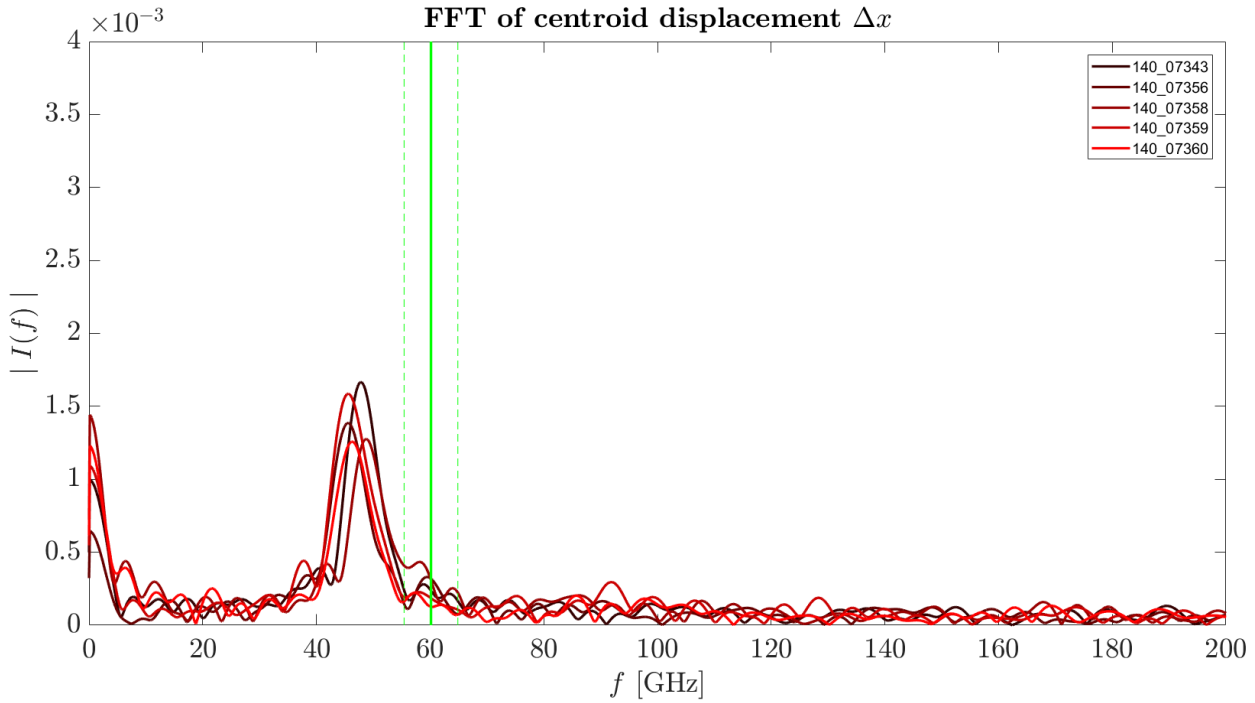




no delay

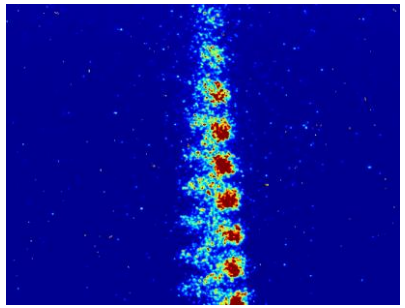
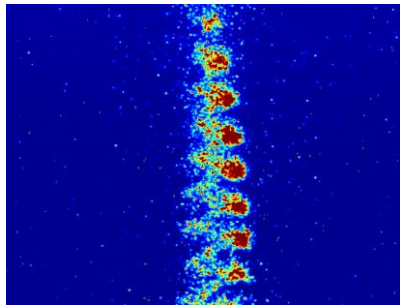
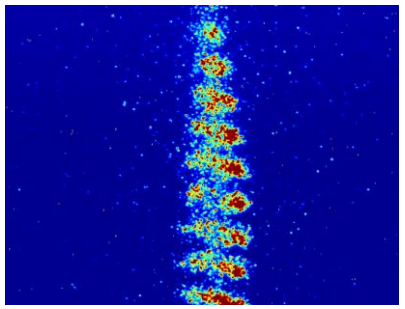
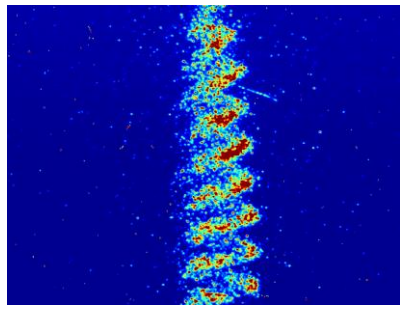
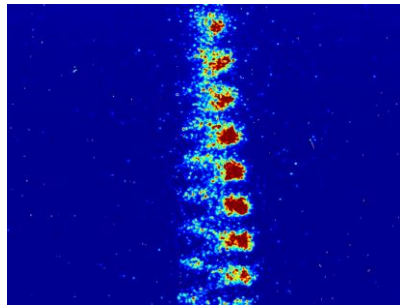
Events with symmetric Hosing:

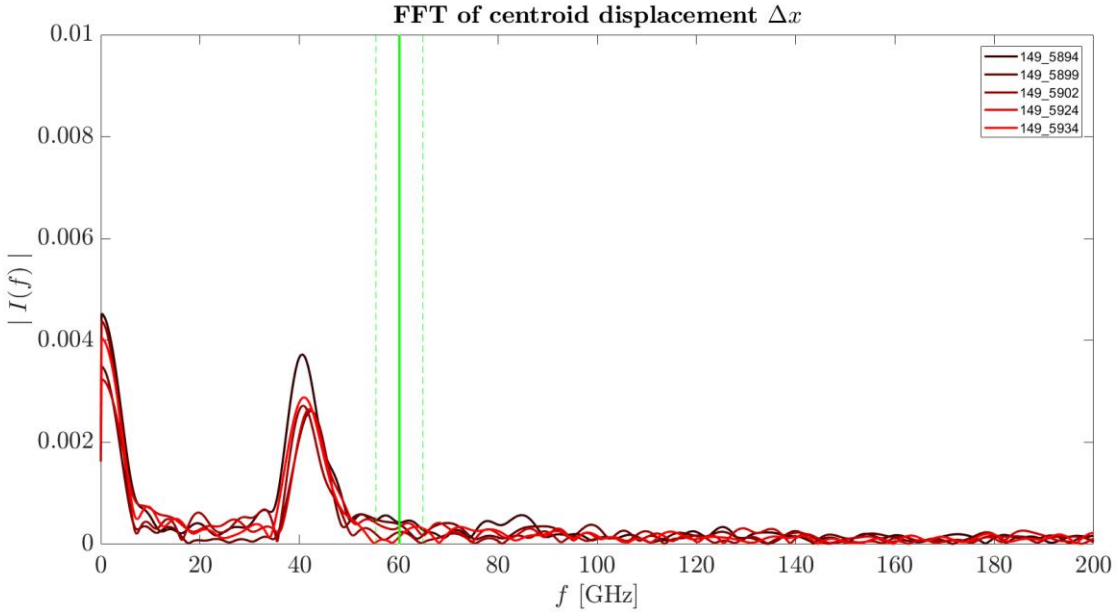




delay laser/p+: 1000 ns

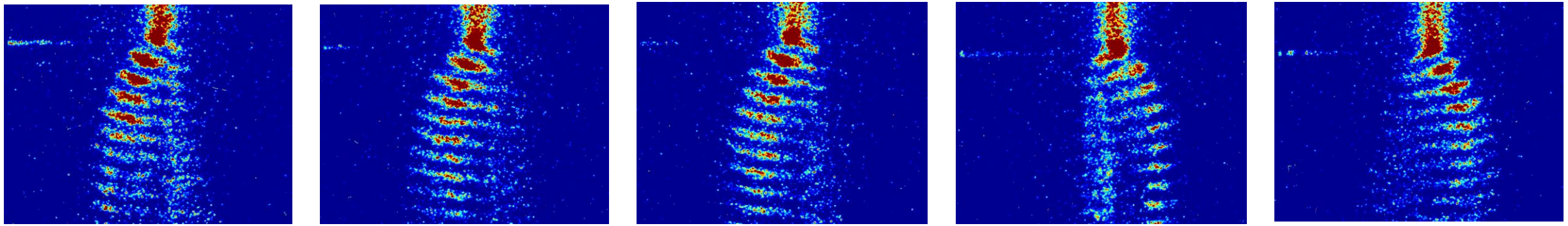
Events with asymmetric Hosing:

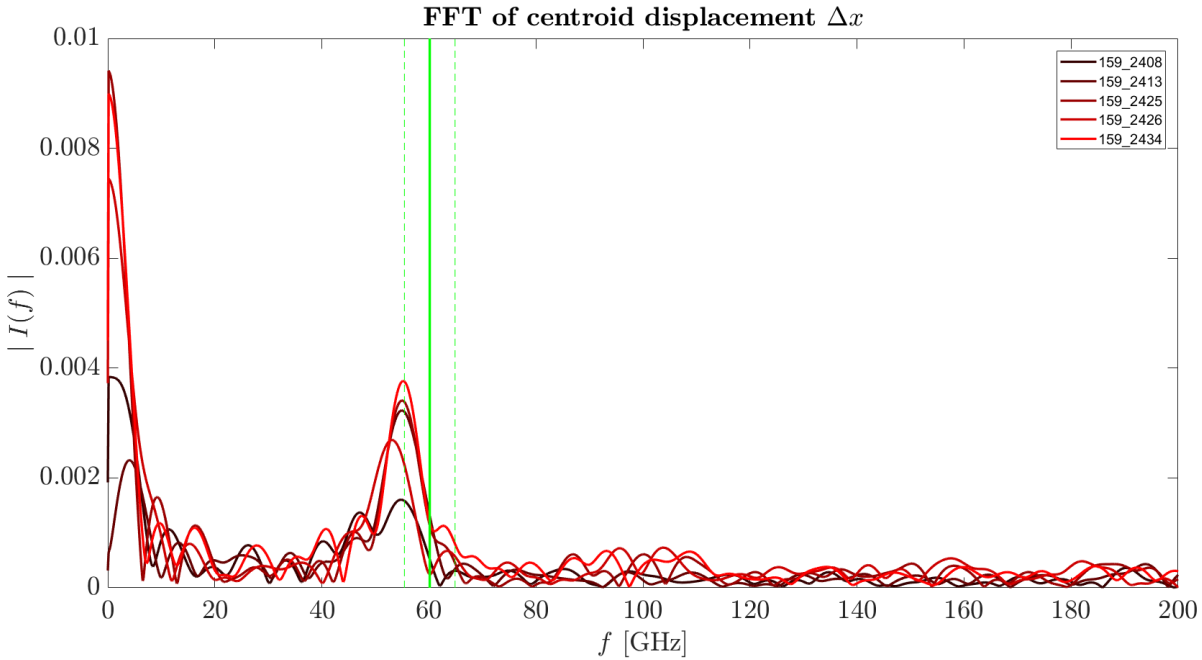








delay laser/p+: 3126 ns

Events with „Kicks“:





no delay