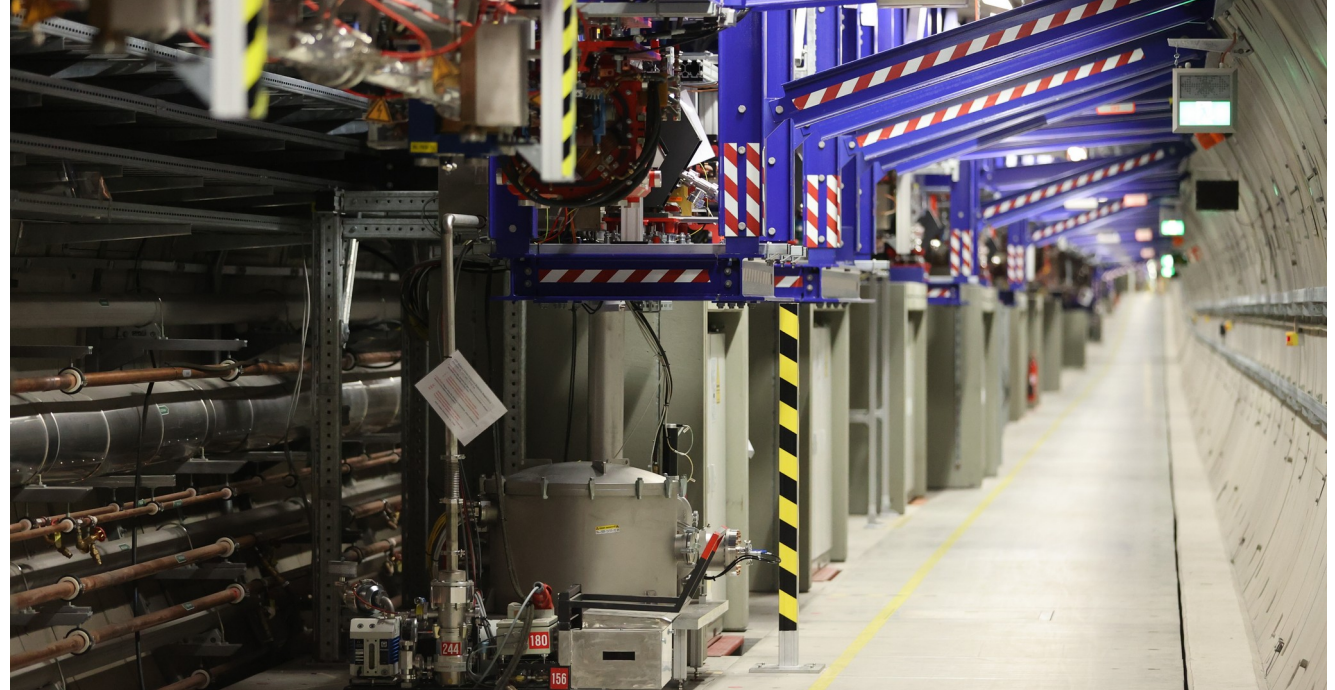


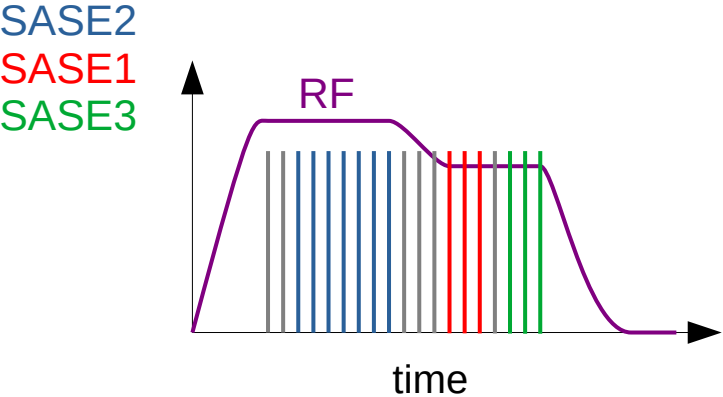
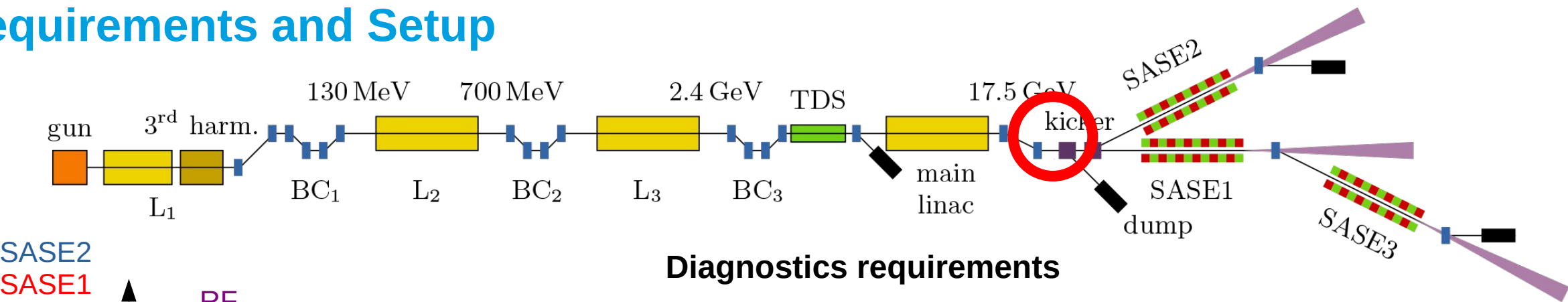
THz spectrometer using diffraction radiation for parasitic current profile measurements at EuXFEL.

N. M. Lockmann, Ch. Gerth, S. Wesch, J. Zhu,
L. Fröhlich, O. Hensler



10th MT ARD ST3 Workshop
Helmholtz Zentrum Berlin, 7.9 – 9.9.2022

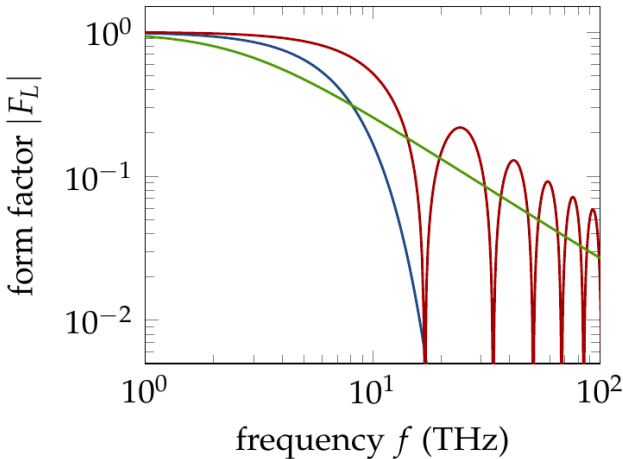
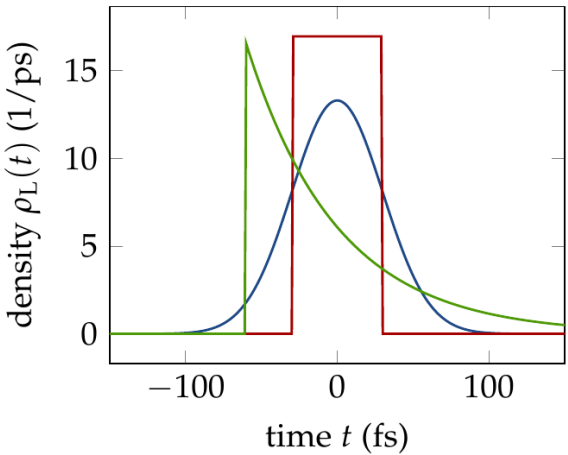
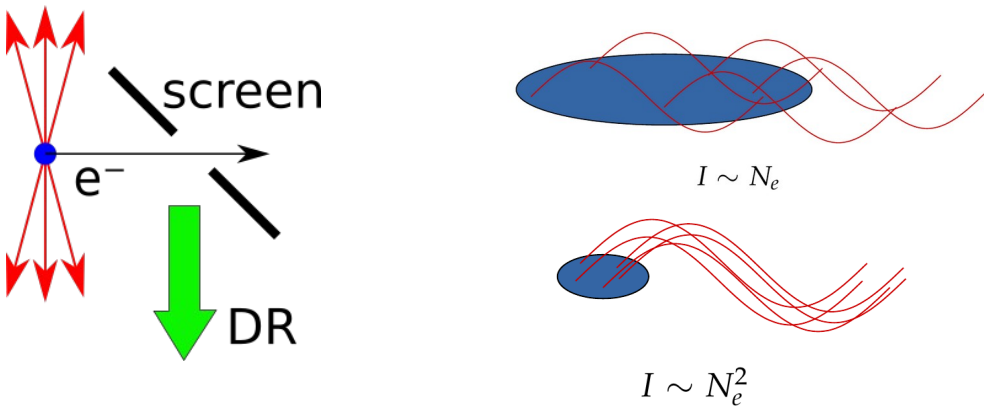
Requirements and Setup



Diagnostics requirements

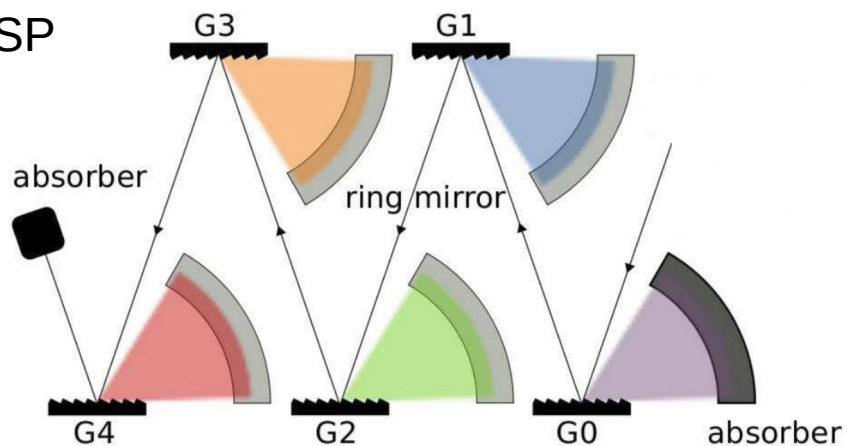
- Few femtosecond resolution
- Every bunch
 - Non-invasive
 - MHz readout rates

Spectroscopy of coherent diffraction radiation:



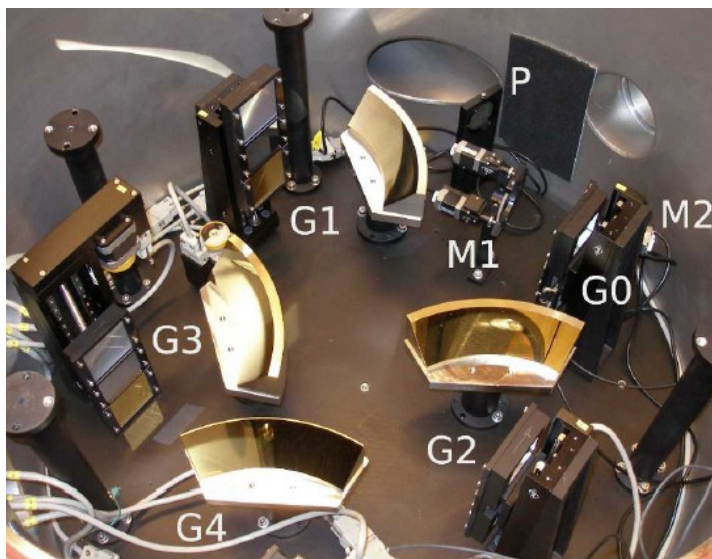
Spectrometer and Results

CRISP

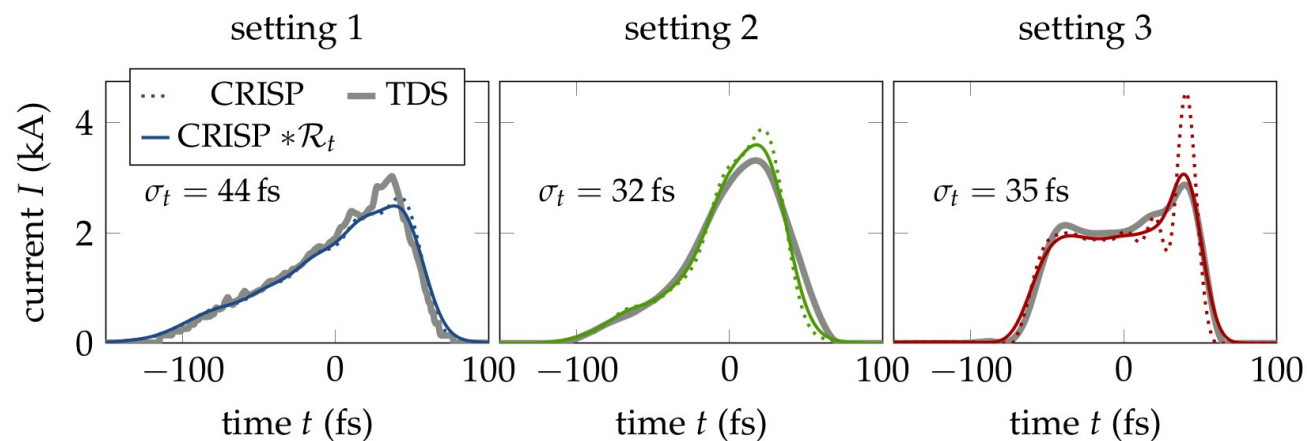
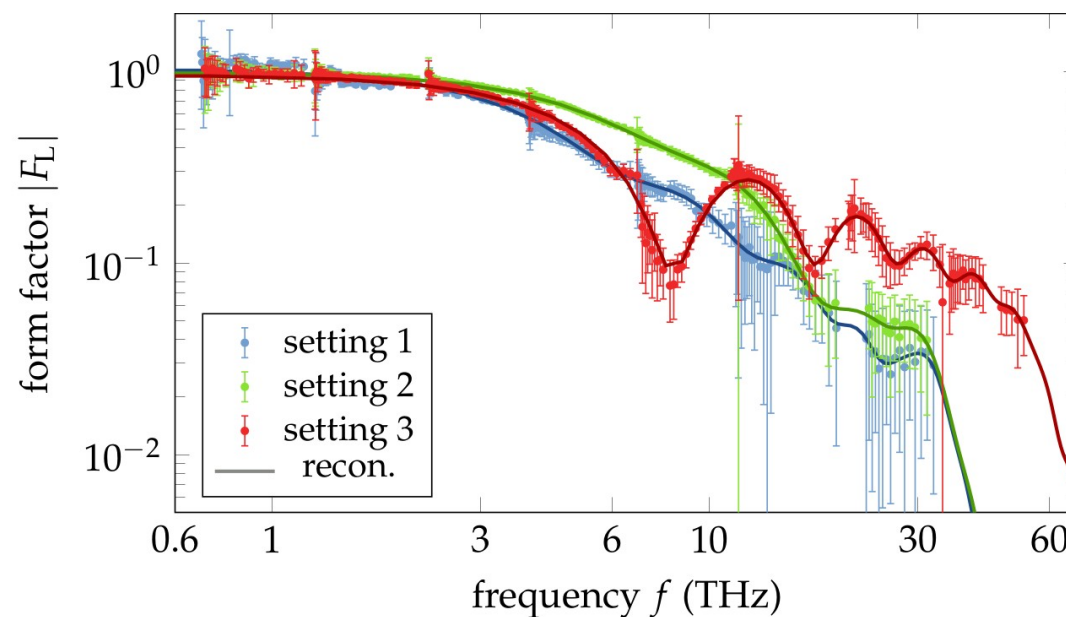


Single-shot:

0.7 THz – 6 THz or 6 THz – 60 THz

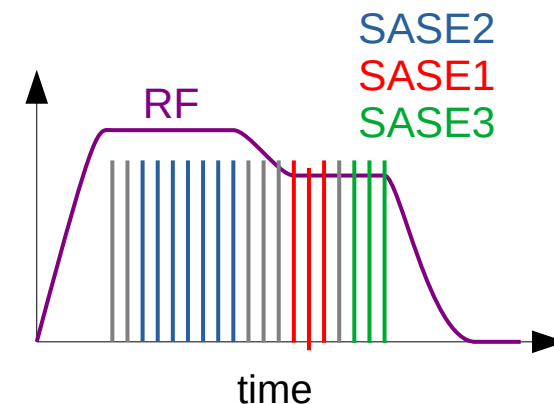
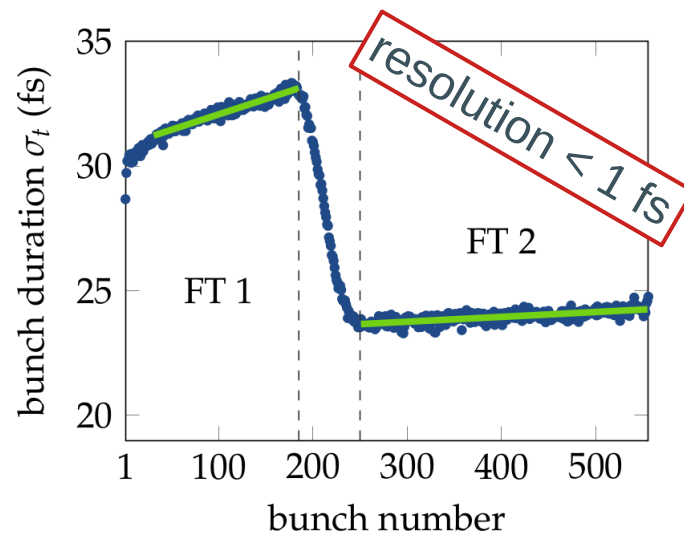
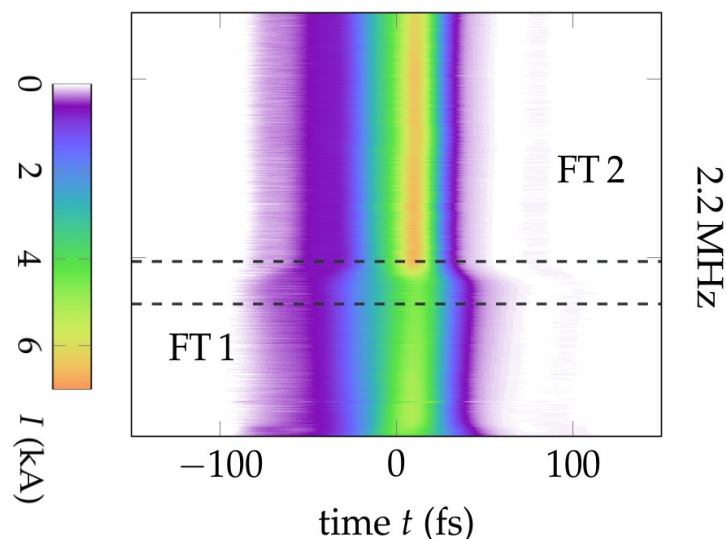


Benchmarking

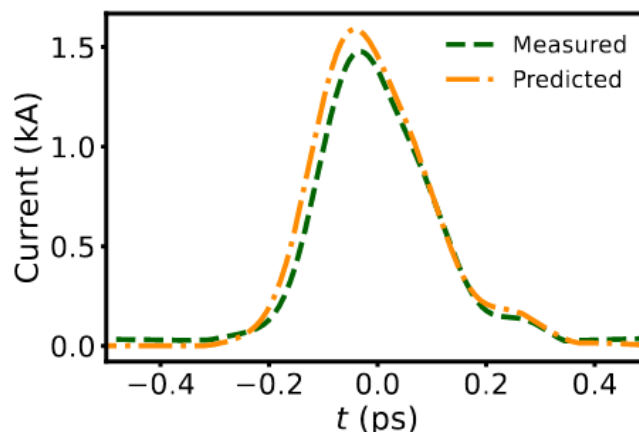
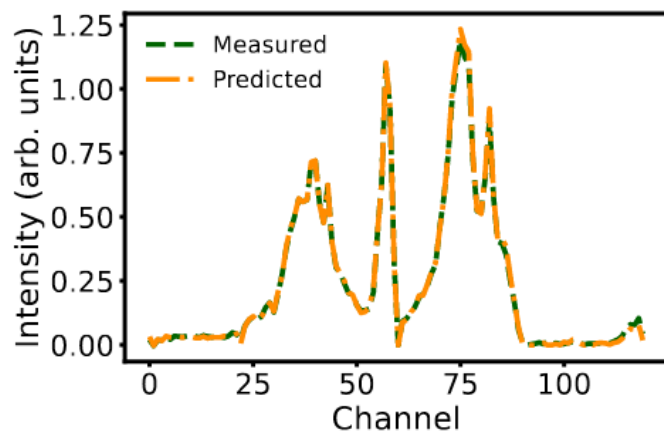


Applications

Characterization during user operation



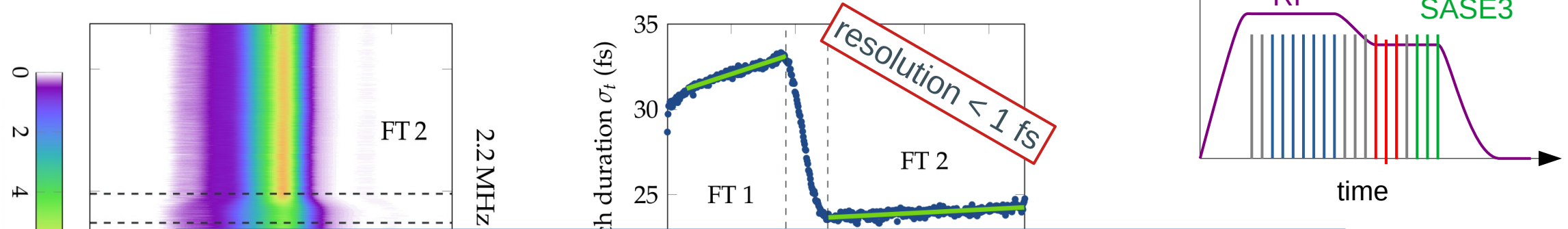
Machine Learning



- Virtual Diagnostic
- Advanced current profile reconstructions
- Feedback loops / Neural network for bunch compression

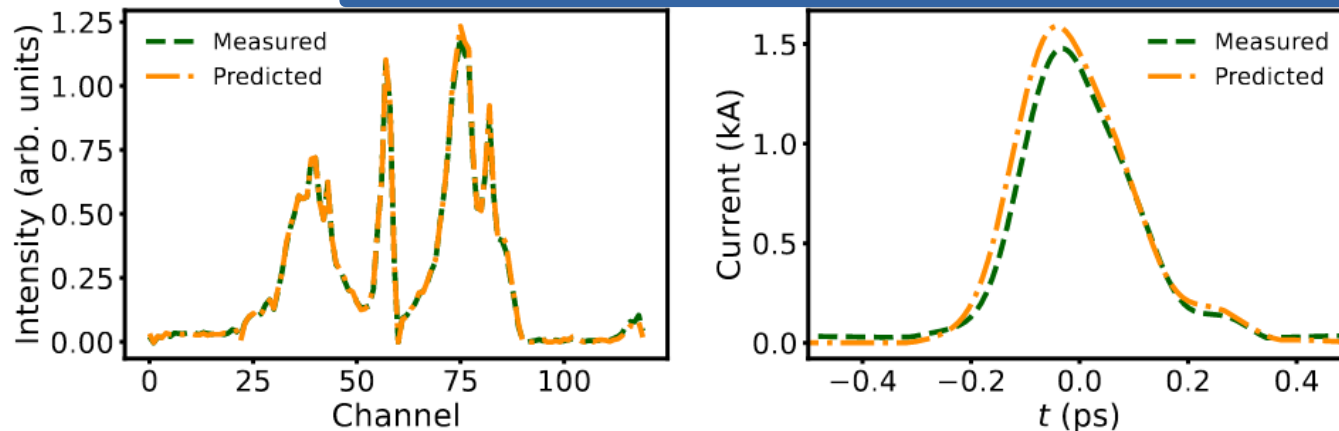
Applications

Characterization during user operation



See you at the Poster!

Machine Learning



- Virtual Diagnostic
- Advanced current profile reconstructions
- Feedback loops / Neural network for bunch compression