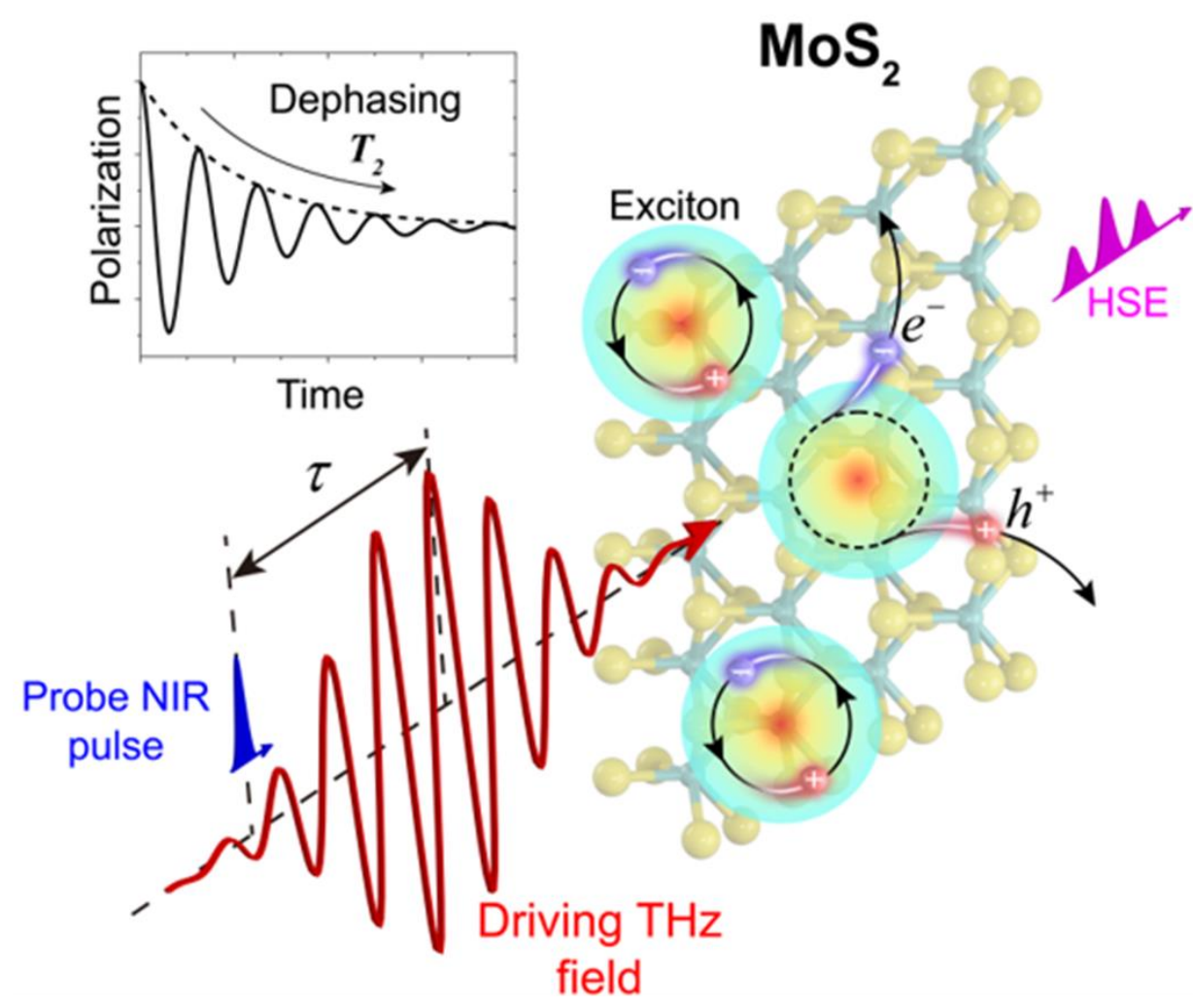
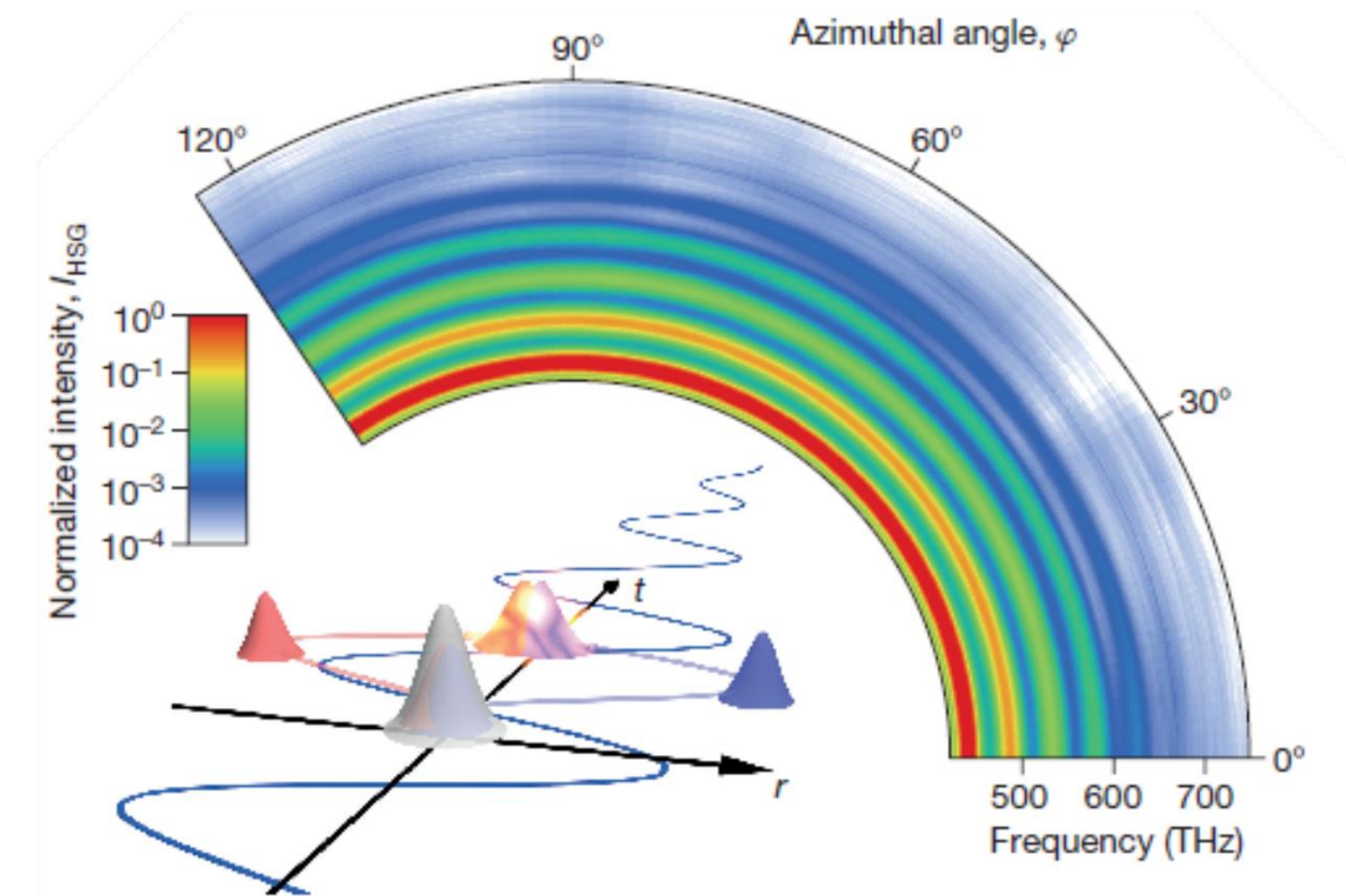
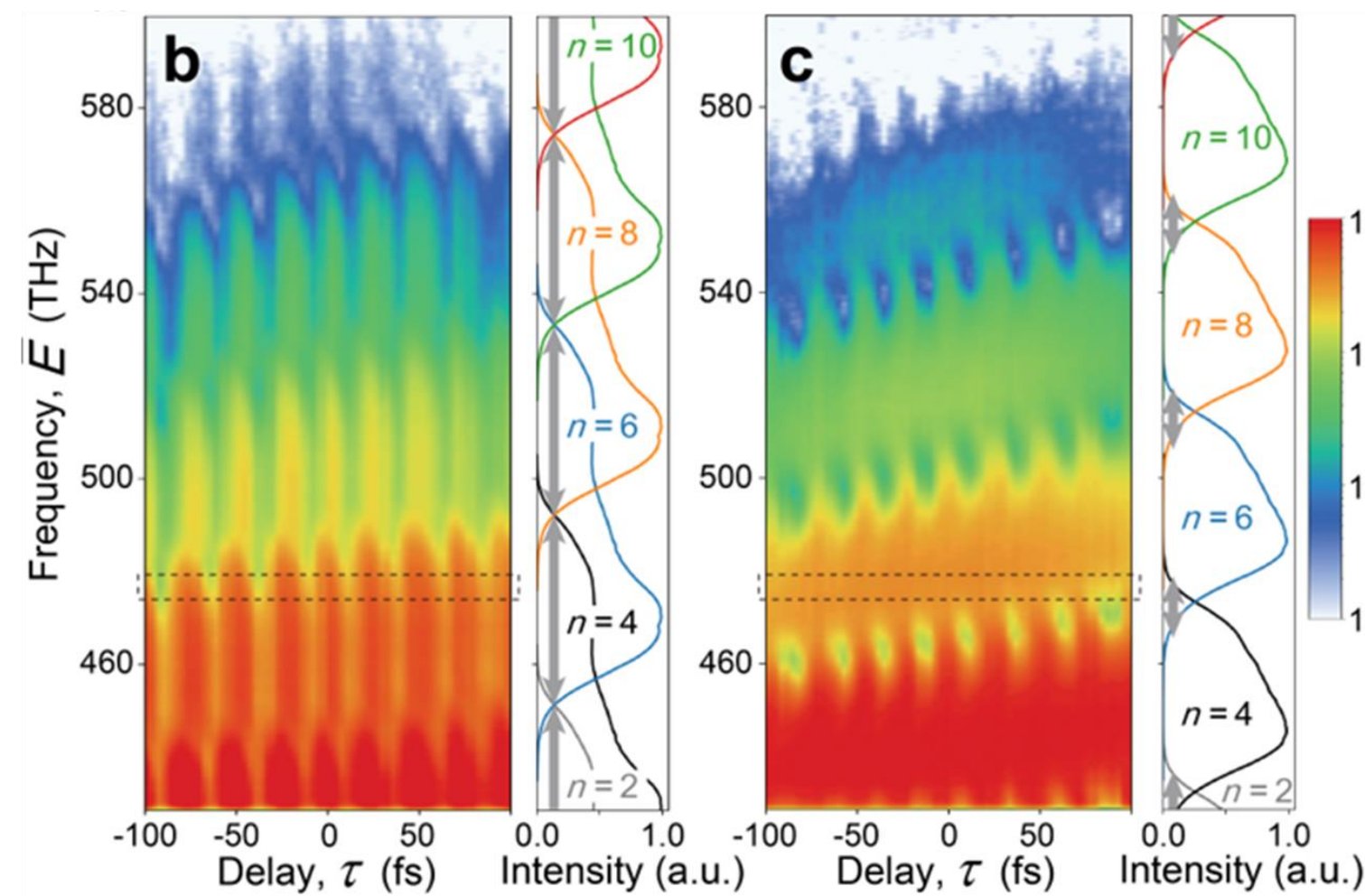


## Previous work

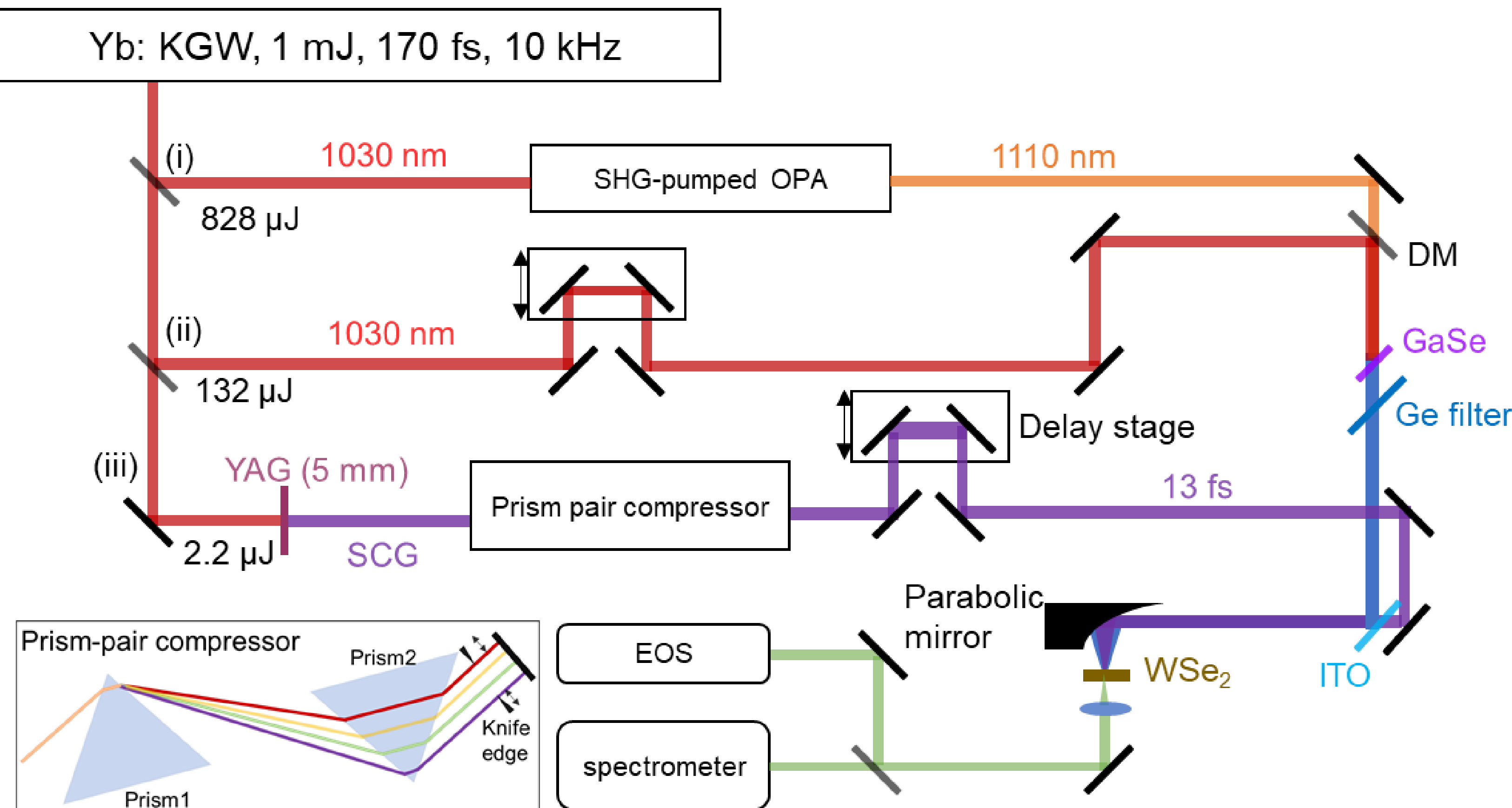


Time- and spectrum-resolved quantum-path interferometry reveals exciton dephasing in MoS<sub>2</sub> under strong-field conditions. (In submission)



Lightwave-driven quasiparticle collisions on a subcycle timescale. Nature 533, 225–229 (2016)

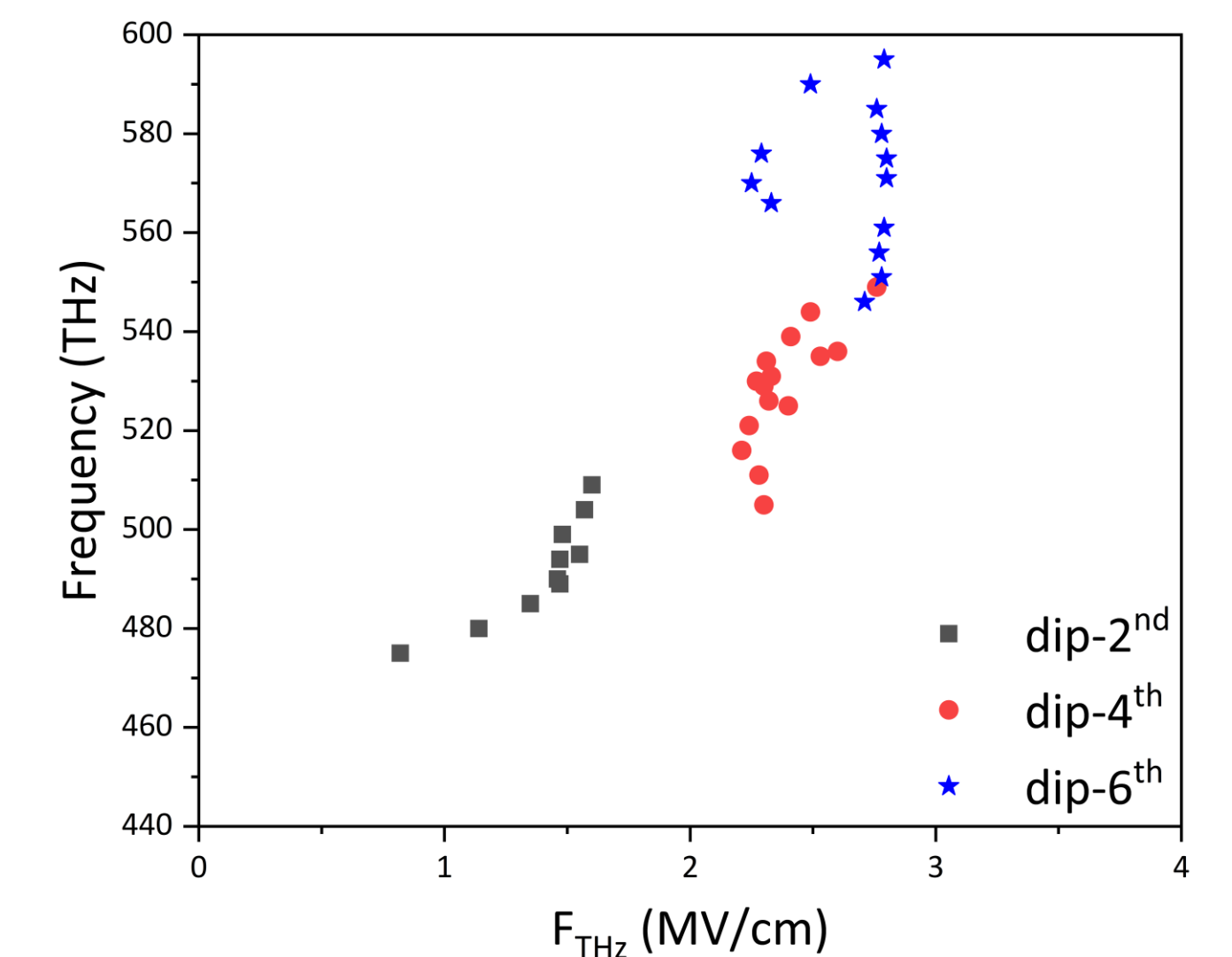
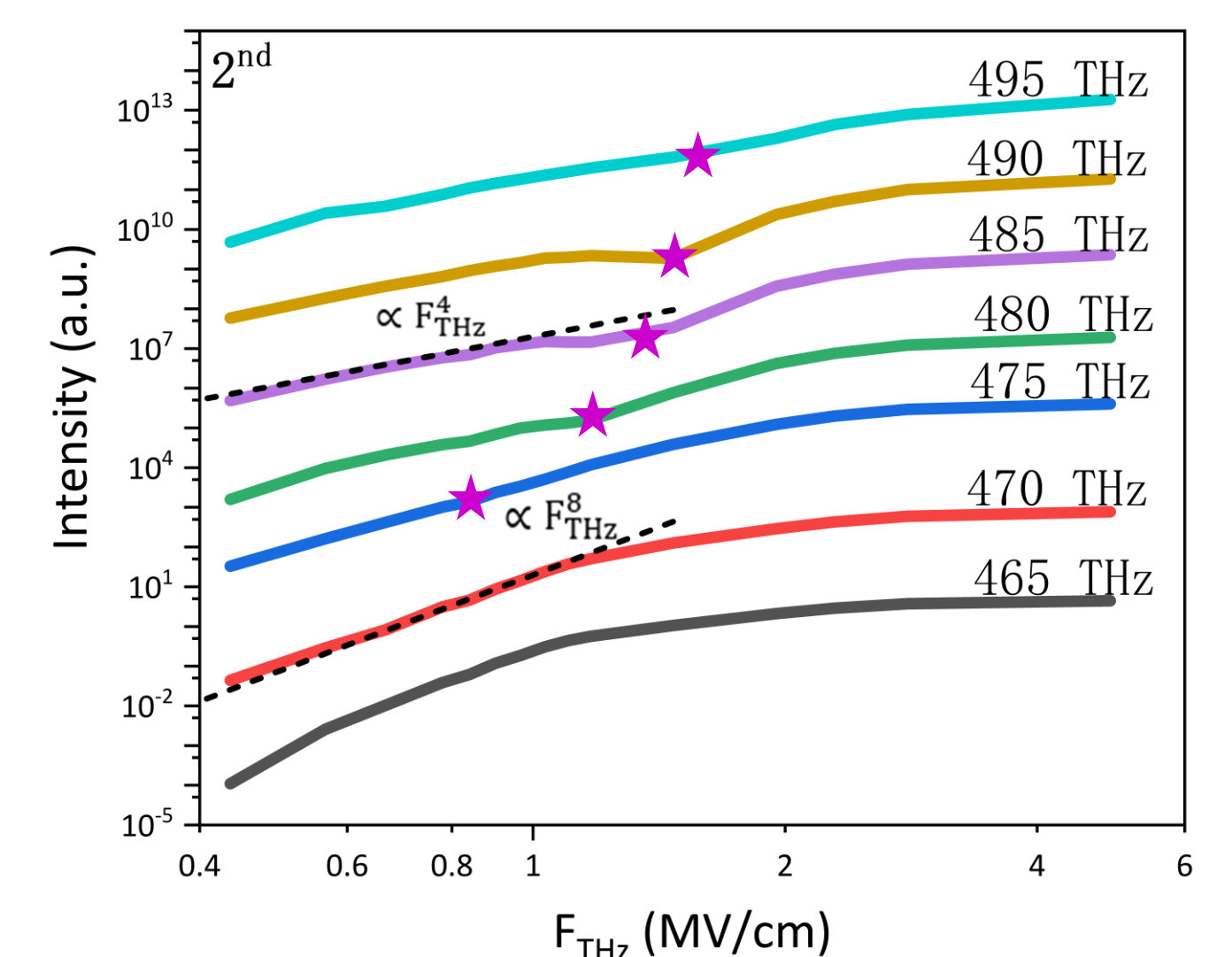
## High-order sideband emission



Schematic of the experimental setup.

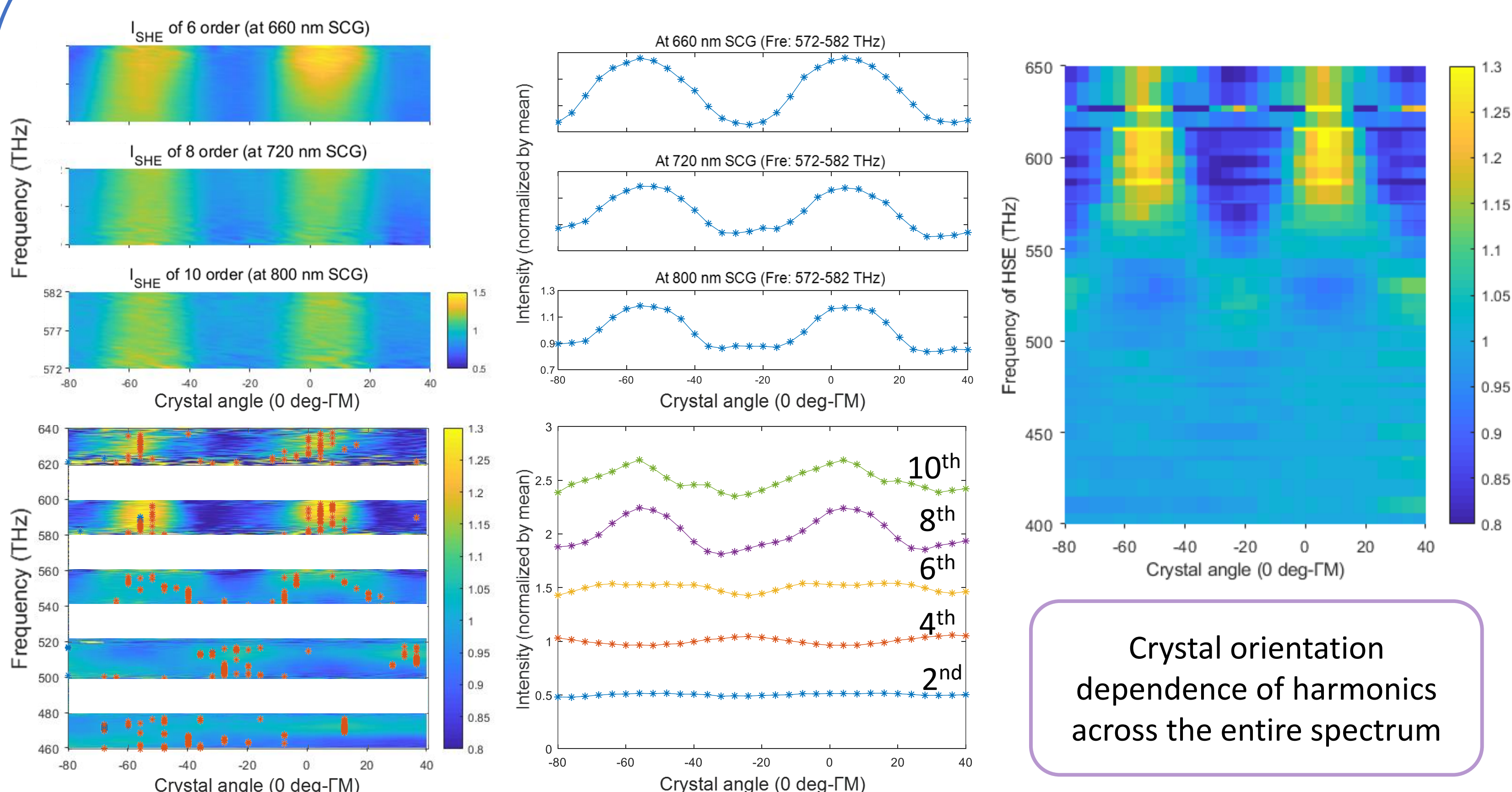
Inset: Schematic of the prism-pair compressor for compressing the SCG beam.

## THz intensity variations



Recorded  $I_{\text{HSE}}$  of 2<sup>nd</sup> as a function of driving peak field strength  $F_{\text{THz}}$ . On its dependence curve, there are some peculiar inflection points that correspond to different THz energies at different harmonic frequencies.

## Crystal-orientation dependence



Crystal orientation dependence of harmonics across the entire spectrum

The manifestation of harmonics signals at different orders within the same frequency range; The 2 - 10<sup>th</sup> harmonic signals generated by the excitation light fixed at 700 nm vary with crystal orientation.

## Conclusion

1. We constructed an intense multi-cycle terahertz pulse and near-infrared pump-probe system with stable carrier-envelope.
2. The dependence curve of harmonics from WSe<sub>2</sub> material on terahertz intensity exhibits distinct inflection points, suggesting a possible correlation between their frequency-dependent characteristics and the coherence of WSe<sub>2</sub> at different K-points in the band structure.
3. We observed a pronounced crystal orientation dependence on the intensity of harmonics generated at different SCG wavelengths.