

## **Non-linear THz studies at the TeraFERMI beamline**

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### **Abstract**

TeraFERMI is the THz beamline of the FERMI Free Electron Laser providing intense and broadband THz pulses. The THz fields are used to achieve THz control of matter and to push materials well into their nonlinear regime. THz nonlinearities are particularly pronounced in Dirac materials, because of their non-conventional band-structure properties. We report here on the THz nonlinear electrodynamics of the topological insulator  $\text{Bi}_2\text{Se}_3$  and on layered black phosphorus, thus highlighting the role of band dispersion in shaping the nonlinear properties.