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Time-resolved ARPES study of the candidate type II Weyl-semimetal WTe2 ELIA RAZZOLI, F. BOSCHINI, M. MICHIARDI, M. ZONNO, P. NIGGE, B. ZWARTSENBERG, G. LEVI, Quantum Matter Institute, Department of Physics Astronomy, University of British Columbia, B. YAN, V. SUESS, C. FELSER, Max Planck Institute for Chemical Physics of Solids, Dresden, Germany, A. K. MILLS, D. J. JONES, A. DAMASCELLI, Quantum Matter Institute, Department of Physics Astronomy, University of British Columbia — Since their theoretical prediction in 1929, Weyl fermions have eluded the high-energy physics community. Only very recently quasiparticle behaving like Weyl fermions have been identified first in the semimetal TaAs, then in various compounds such as NdAs, TaP and NdP [1]. Soon after these observations it was realized that, contrary to high energy physics particles, Weyl quasi-particles in solids can break Lorentz invariance. Materials hosting these novel quasiparticles are named type-II Weyl semimetals and WTe2 was proposed as the first realization of such exotic state of matter [2]. In this contribution we will present a pump-probe time-resolved ARPES study to investigate the relaxation dynamics in the candidate type II Weyl-semimetal WTe2. We identify fast and slow components in the electron relaxation dynamics, which display a strong dependence on both the electron momentum k and temperature. The interplay between the temperature evolution of this dynamics, details of the electronic band structure, and putative Weyl quasiparticle behaviour, will be discussed. [1] Z. K. Liu et al., Nature Materials 15, 27–31 (2016). [2] A. A. Soluyanov et al., Nature 527, 495–498 (2015).

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