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**HIGH-T<sub>c</sub> SUPERCONDUCTORS INVESTIGATED WITH TIME- AND ANGLE-RESOLVED PHOTOEMISSION**

Relaxation of optically excited electron-hole pairs proceeds in metals on ultrafast time scales [1]. In superconductors the relaxation rates of quasiparticles at energies close to the superconducting gap edge are reduced because of the reduction of quasiparticle states at the Fermi level [2]. Since the decay proceeds - at least in part - by Cooper pair reformation, the study of the quasiparticle relaxation dynamics bears potential to analyze the interaction responsible for Cooper pair formation. In this talk recent results of femtosecond pump-probe experiments with angle-resolved photoelectron detection will be presented for optimally doped Bi<sub>2</sub>Sr<sub>2</sub>CaCu<sub>2</sub>O<sub>8+d</sub> in the superconducting state [3] and on EuFe<sub>2</sub>As<sub>2</sub> (parent compound). In the cuprate system we find a predominant excitation of quasiparticles at momenta near the antinode. We show furthermore, that at low enough excitation density quasiparticle relaxation is dominated by Cooper pair reformation. In the Fe-pnictide material we monitor a difference in the relaxation rate for electrons and holes near the Fermi momentum, which disappears above the Neel temperature. We conclude on an optical modification of the antiferromagnetic order. Future experiments will focus on a variation of excitation density and doping to analyze its influence on the relaxation dynamics.

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[1] Kirchmann et al., *Nature Physics* 6, 782 (2010).

[2] Demsar et al., *Phys. Rev. Lett.* 82, 4918 (1999).

[3] Cortés et al., *Phys. Rev. Lett.* 107, 097002 (2011).