# Snapshots of the retarded interaction of charge charriers with ultrafast fluctuations in cuprates

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One of the pivotal questions in the physics of high-temperature superconductors is whether the low-energy dynamics of the charge carriers is mediated by bosons with a characteristic timescale. This issue has remained elusive since electronic correlations are expected to dramatically speed up the electron-boson scattering processes, confining them to the very femtosecond timescale that is hard to access even with state-of-the-art ultrafast techniques. Here we simultaneously push the time resolution and the frequency range of transient reflectivity measurements up to an unprecedented level that enables us to directly observe the ∼16 fs build-up of the effective electron-boson interaction in hole-doped copper oxides. This extremely fast timescale, together with the outcome of calculations for the t-J model and the repulsive Hubbard model, indicates that short-range antiferromagnetic fluctuations are the bosons that likely mediate the retarded electron interactions in copper oxides close to optimal doping, where the largest critical temperature is reached.