16. Title: Photoinduced melting of superconductivity in the high-T-c superconductor La2-xSrxCuO4 probed by time-resolved optical and terahertz techniques
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    Abstract: The dynamics of depletion and recovery of a superconducting state in La2-xSrxCuO4 thin films is investigated utilizing optical pump-probe and optical pump-THz-probe techniques as a function of temperature and excitation fluence. The absorbed energy density required to suppress superconductivity is found to be about eight times higher than the thermodynamically determined condensation energy density and nearly temperature independent between 4 and 25 K. These findings indicate that, during the time when the superconducting state suppression takes place (approximate to 0.7 ps), a large part (nearly 90%) of the energy is transferred to the phonons with energy lower than twice the maximum value of the superconducting gap and only 10% is spent on Cooper pair breaking.