

Correction to “Persistent Energetic Electrons in Methylammonium Lead Iodide Perovskite Thin Films”

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Page 15719. In Figure 2A, the pump–probe delay was wrongly labeled as –400 to 2500 ps. The correct label is –0.4 to 2.5 ps, as shown in the corrected figure below:

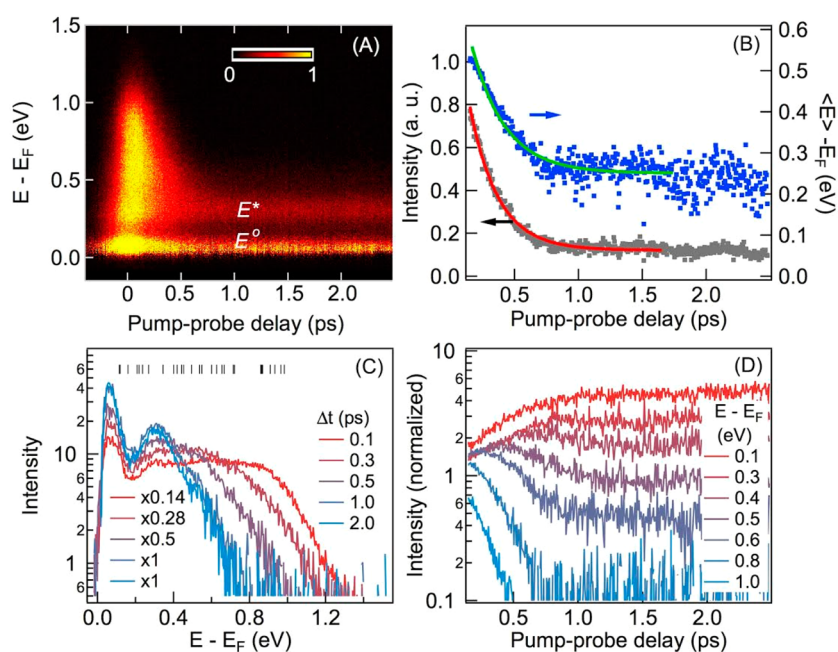


Figure 2. Initial electron cooling dynamics on the ps time scale. (A) Pseudocolor plot (intensity) of TR-2PPE spectra as a function of energy (above E_F) and pump–probe delay (Δt) for $\text{CH}_3\text{NH}_3\text{PbI}_3$ thin films (35 nm) on $\text{SiO}_2/\text{Si}(111)$. (B) Energy integrated photoelectron intensity (gray dots, left axis) and average electron energy of the high energy E^* 2PPE peak (blue dots, right axis) as a function of pump–probe delay. The red and green curves are single exponential fits with time constant $\tau_C = 0.25 \pm 0.05$ ps. (C) Intensity normalized TR-2PPE spectra at the selected pump–probe delays (0.1–2.0 ps). The black sticks above the spectra are theoretical predicted positions of photoelectrons (see Figure S6). (D) Kinetic profiles of normalized intensity at the indicated electron energies (from top to bottom, 0.1–1.0 eV). The pump and probe photon energies are $h\nu_1 = 2.68$ eV and $h\nu_2 = 4.43$ eV, respectively. The laser pulse energy densities are $5.4 \pm 0.5 \mu\text{J}/\text{cm}^2$ for the pump (excitation density $1 \times 10^{18} \text{ cm}^{-3}$) and $0.54 \pm 0.05 \mu\text{J}/\text{cm}^2$ for probe. All measurements were carried out at sample temperatures of 190 K. On the short time scale when the pump and probe pulses overlap (–100 to 100 fs), there is contribution to 2PPE signal from UV pump and visible probe. To minimize this interference, we analyze data only at $\Delta t \geq 100$ fs.