

Abstract Submitted
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Photoexcited carrier spin dynamics in $\text{CH}_3\text{NH}_3\text{PbI}_3$ ¹ PATRICK ODENTHAL, NATHAN GUNDLACH, WILLIAM TALMADGE, University of Utah, RUIZHI WANG, Nanjing University of Science and Technology, CHUANG ZHANG, DALI SUN, ZEEV VALY VARDENY, YAN (SARAH) LI, University of Utah — Metal halide perovskites have shown great promise for the field of spintronics due to their large tunable spin-orbit coupling, spin dependent optical selection rules and predicted electrically tunable Rashba band. The spin sensitive optical transitions allow optical spin orientation of carriers using circularly polarized light, and detection of the spin polarization via optical Faraday rotation measurement. We study carrier spin dynamics on solution-processed polycrystalline $\text{CH}_3\text{NH}_3\text{PbI}_3$ films using time-resolved Faraday rotation (TRFR). TRFR reveals unexpected long spin lifetimes exceeding 1ns at 4K. This is significant given that Pb and I exhibit large spin-orbit coupling, which usually lead to fast spin relaxation.

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