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Bright Interlayer Exciton Dynamics in $MoSe_2$-WSe_2 Heterostructures PASQUAL RIVERA, KYLE SEYLER, JASON ROSS, JOHN SCHAIBLEY, Univ of Washington, HONGYI YU, Univ of Hong Kong, JON ELL, MARIE SCOTT, Univ of Washington, JIAQIANG YAN, DAVID MANDRUS, Oak Ridge National Laboratory / Univ of Tennessee, WANG YAO, Univ of Hong Kong, XIAODONG XU, Univ of Washington — Monolayer transition metal dichalcogenide heterostructures have recently demonstrated type-II band alignment, prompting great interest in characterizing the properties of this new material system. In the monolayer $MoSe_2$-WSe_2 heterostructure, bright spatially indirect excitons with dramatically extended lifetimes have been demonstrated. Since the interlayer excitons are permanent electrical dipoles, they allow for electrical and optical control. Here, we report on the investigation of interlayer exciton emission energy, lifetime, and in-plane spatial diffusion, as a function of electric field and exciton density, in the $MoSe_2$-WSe_2 heterostructure.

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