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Interlayer Physics in $MoSe_2/WSe_2$ Heterostructures PASQUAL RIVERA, Univ of Washington, HONGYI YU, Univ of Hong Kong, AARON M. JONES, JOHN SCHAIBLEY, JASON ROSS, SANFENG WU, GRANT AIVAZIAN, Univ of Washington, PHILLIP KLEMENT, Justus-Liebig-University, NIRMAL GHIMIRE, JIAQIANG YAN, DAVID MANDRUS, Univ of Tennessee, WANG YAO, Univ of Hong Kong, XIAODONG XU, Univ of Washington — Van der Waals bound heterostructures of atomically thin 2D materials have recently been shown to possess unique properties beyond those of the individual layers. The unique phenomena arising from interactions between vertically stacked layers has generated substantial attention. With direct bandgaps ranging from 1.2 eV to 2.5 eV and strong spin-orbit coupling, monolayer transition metal dichalcogenide based heterostructures provide an intriguing platform for investigating new physics in heterostructure systems. Theoretical studies suggest the possibility of new device applications based on heterostrctures built from these materials, such as optically active bandgap engineering, vertical-tunneling field effect transistors, and new light harvesting technologies. Here, we investigate the interlayer interactions of one such heterostructure configuration, vertically stacked WSe_2 and $MoSe_2$ monolayers, using optoelectronic techniques. Our results suggest that interlayer interactions have significant impacts on exciton physics in the heterostructure. Progress towards understanding the nature of these effects in the $MoSe_2/WSe_2$ heterostructure will be presented.

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