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Substrate effect on few-layer MoS2 transistors JATINDER KUMAR, HUI-CHUN CHIEN, HSIN-YING CHIU, Department of Physics and Astronomy, University of Kansas, KS 66045 — Due to the realization of graphene transistors but without applicable bandgap, the similar layered structure molybdenum disulfide (MoS2) field effect transistors with nonzero bandgap have been demonstrated and reveal promising potential. Previous experiments showed that carrier mobility could be enhanced by depositing hafnium dioxide (HfO2) on top of MoS2 devices, which was possibly attribute to the suppression of Coulomb scattering by high-κ environment and surface polar phonon scattering. In our talk, we will present the electrical transport experiments in few layers of MoS2 on HfO2 dielectrics, including the carrier mobility improvement and electrical transport phenomena in high bias region.

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