



Contribution ID: 133

Type: **poster**

## Ultrafast Exciton Buildup in Monolayer MoS<sub>2</sub>

*Monday 1 July 2019 18:15 (2 hours)*

We study the ultrafast relaxation of excited carriers into the lowest lying excitonic state of monolayer MoS<sub>2</sub> after excitation with  $\approx 20$ fs laser pulses with different carrier frequencies using a density-matrix-formalism including many-body effects and electron-phonon scattering from ab-initio calculations.

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**Session Classification:** Poster session 1