

# Electronic Correlations and Pseudodoping in Two-Dimensional Materials

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Two-Dimensional materials are in most cases not isolated but in direct contact to a substrate or part of vertical heterostructures. In this talk, we discuss how vertical coupling affects the electronic system of correlated two-dimensional materials. We firstly explain the effect of “pseudodoping”, i.e. apparent doping of metallic 2d materials without actual charge transfer, which occurs due to coupling to supporting substrates [1]. We then address the question of how electronic correlations and coupling to substrates can be exploited to switch 2d materials between conductive and insulating states. Examples of 2d Mott insulators [2] and impurities in 2d semiconductors will be considered.

## References

- [1] B. Shao et al., “Pseudodoping of Metallic Two-Dimensional Materials by The Supporting Substrates”, arXiv:1807.00756 (2018).
- [2] E. Kamil et al., “Electronic structure of single layer 1T-NbSe<sub>2</sub>: interplay of lattice distortions, non-local exchange, and Mott–Hubbard correlations”, JPCM 30 325601 (2018).