



Pozvánka na seminár
Oddelenia teoretickej fyziky
ÚEF SAV, v. v. i.



štvrtok, 24. apríl 2025 o 11:00

Salónik ÚEF, Watsonova 47, Košice

„Proximity effect of correlated electronic states of 1T-TaS₂
on graphene“

Prednášajúci:

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Anotácia:

Proximity-induced effects in graphene-based van der Waals heterostructures have been shown to provide an efficient way to tune graphene's low-energy electronic states [1]. Transition metal dichalcogenide 1T-TaS₂ exhibits a variety of periodic lattice distortions, triggering a stable low-temperature periodic charge density wave with a David star pattern and magnetic ground state in the monolayer limit. In the talk, we will discuss proximity-induced effects such as spin-orbit coupling and exchange interaction in graphene on monolayer 1T-TaS₂ using density functional theory and tight-binding modeling [2]. Using the effective tight-binding model, the charge to spin conversion efficiency using the linear Kubo response approach and the self-induced torque within the non-equilibrium Green's function transport will be presented.

[1] K. Zollner, M. Kurpas, M. Gmitra, J. Fabian, Nature Reviews Physics (2025).

[2] K. Szalowski, M. Milivojević, D. Kochan. M. Gmitra, 2D Materials 10, 025013 (2023).