

数学与系统科学研究院

计算数学所学术报告

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报告题目:

Compliant Substrate Epitaxy: Au on MoS₂

邀请人: **戴小英 副研究员**

报告时间: **2016 年 8 月 11 日 (周四)**

上午 10:00-11:00

报告地点: **数学院南楼七层**

702 会议室

Abstract:

Van der Waals (VDW) bonded, layered transition metal dichalcogenides (TMDCs) are promising 2D materials and have drawn much research attention recently. A theory for the epitaxial growth on the transition metal dichalcogenides is developed and analyzed. A prototypical example of Au epitaxially grown on MoS₂ is studied. It is demonstrated that if one accounts for interfacial energies and strains, the presence of misfit dislocations, and the compliance of the MoS₂ substrate, the experimentally observed growth orientation (Au {111} orientation) will be energetically favored. Meanwhile, with only the top substrate layer being compliant (strained), this epitaxy method can serve as a means to exfoliate and transfer large single layers sheets of MoS₂. The exfoliation of monolayer based on this epitaxy idea has been realized experimentally. This epitaxy model could prove technologically useful in 2D electronic devices and in epitaxial thin film growth applications.

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