# Analytic and topological properties of twisted bilayer and multilayer graphene

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**摘　要：** Magic angles are a hot topic in condensed matter physics: when two sheets of graphene are twisted by those angles the resulting material is superconducting. In 2011, Bistritzer and MacDonald proposed a model that are experimentally very accurate in predicting magic angles. In this talk, I will introduce some recent mathematical progress on the Bistritzer--MacDonald Hamiltonian of twisted bilayer and multilayer graphene, including the generic existence of Dirac cones and the existence of magic angles. This includes several joint works with Simon Becker, Tristan Humbert, Solomon Quinn, Zhongkai Tao, Alexander Watson and Jens Wittsten.

**个人简介：** 杨萌轩，2016年本科毕业于北航-中科院华罗庚班，2022年博士毕业于美国西北大学，2022年至今在美国加州大学伯克利分校担任Morrey Visiting Assistant Professor。主要研究方向为谱理论与散射理论，以及二维拓扑材料的相关数学理论，主要工作包括完善发展了多个Aharonov--Bohm磁矢势的散射理论，证明了扭转石墨烯Bistrizter--MacDonald模型中魔角的存在性。曾获美国AMS-Simons Travel Grant。