ICFO

Fractional Chern Insulators in van der Waals Heterostructures

ANDREA YOUNG

July 27, 2018
15:00
Seminar Room

I will describe the experimental observation of ?fractional Chern insulators' in van der Waals heterostructures created by combining atomically thin graphite and insulating hexagonal boron nitride. van der Waals heterostructures provide an ideal experimental platform for investigating the correlated physics of Chern bands, allowing superlattice potentials (engineered from the interference of the mismatched graphene and boron nitride lattices) to be combined with exceptionally low disorder and strong electronic interactions. I will show how to distinguish the fractional Chern insulators-which feature fractionally charged excitations--from the other gapped electronic phases in these devices including those that break lattice symmetries. Finally, I will describe prospects for using fractional Chern insulators as a substrate for engineering intrinsic nonabelian ground states, 'synthetic' nonabelian defect states, and new quantum critical points.

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Hosted by Prof. Dmitri Efetov

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