Floquet engineering of Quantum Materials

Takeshi Oka

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Abstract

Floquet engineering, the control of quantum systems using periodic driving, is an old concept in condensed matter physics, dating back to ideas such as the inverse Faraday effect. There is a renewed interest in this concept owing to the rapid developments in laser and ultrafast techniques combined with the discovery and understanding of various "quantum materials" hosting interesting exotic quantum properties. We review the recent applications of Floquet engineering in ultrafast, nonlinear phenomena in the solid state. In particular, Floquet topological states, application to ultrafast spintronics, and to strongly correlated electron systems are overviewed.