



Contribution ID: 405

Type: **Talk**

Lattice fermions, topological materials and Floquet insulators

Wednesday, 31 July 2024 09:30 (30 minutes)

Different subfields of physics sometimes share a common thread which is often recognized only in hindsight. I will briefly highlight such an example from the past pointing to ties between lattice QCD and condensed matter physics. I will then share recent developments which suggest that similar ties may exist between a class of non-equilibrium quantum systems known as Floquet insulators and discrete time lattice fermion theories. Floquet insulators are periodically driven quantum systems that can host novel topological phases as a function of the drive parameters. I will show that the spectrum of a certain 1+1 dimensional Floquet system can be replicated exactly using a discrete time static relativistic fermion.

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Session Classification: Plenary

Track Classification: Plenary - by invitation only