

Abstract Submitted
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Supermetallic and Trapped States in Periodically Driven Lattices

BALA SUNDARAM, University of Massachusetts at Boston, INDUBALA SATIJA, George Mason University — The gapless metallic phases of periodically driven lattices are shown¹ to exhibit unusual resonant transport characteristics where every resonance is accompanied by a pair of anti-resonances. These anti-resonances describe highly coherent, dynamically localized or *trapped* states, in sharp contrast with the resonant or *supermetallic* states where the quantum dynamics describes free propagation. The supermetallic states are related to the integer winding of the quasienergy spectrum and are characterized by a band structure that is topologically a circle. In the context of novel phases of matter, our study elucidates important distinctions between static and driven systems that pave the way for engineering a variety of band structures resulting in free, trapped as well as flat band states.

¹Indubala I. Satija and Bala Sundaram, arXiv:0783264, cond-mat-quant-gas

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