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Hyperbolic quantum matter

Monday 19 June 2023 09:30 (30 minutes)

Hyperbolic lattices are a new form of synthetic quantum matter in which particles effectively hop on a discrete tiling of two-dimensional hyperbolic space, a non-Euclidean space of negative curvature. Hyperbolic tilings were studied by the British-Canadian geometer H.S.M. Coxeter and popularized through art by M.C. Escher. Recent experiments in circuit quantum electrodynamics and electric circuit networks have demonstrated the coherent propagation of wave-like excitations on hyperbolic lattices. In this talk, I will survey a few of the many exciting directions opened up by this new field, including generalizations of Bloch band theory for hyperbolic lattices, hyperbolic topological materials, and tabletop simulations of the AdS/CFT correspondence.

Presenter: MACIEJKO, Joseph

Session Classification: M-PLN2 Plenary Session | Session plénière - Joseph Maciejko, Herzberg Medal Winner