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Leveraging local symmetry breaking to engineering novel materials.

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The 20th century has been dominated by the realization that symmetry and symmetry breaking influence the forces that govern our universe and are keys to much of the novel phenomena observed in materials today. Recently it has been realized that, even if the global symmetry of a system is retained, a local symmetry breaking can still drive a variety of novel fascinating behaviors. In this talk I will present the effect that local breaking of inversion, translational and rotational symmetry can have in defining fundamental properties of matter from topological phases to superconductivity and how it can be used as a tuning parameter to control novel properties in van der Waals heterostructures.

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