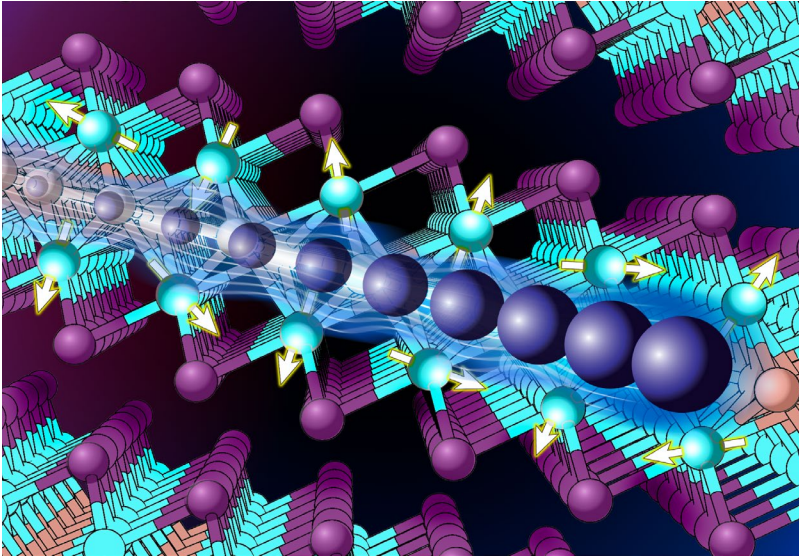


Spintronics in a 2D Intermetallic Material



In CeSiI, the coupling of itinerant electrons (blue spheres) and localized magnetic moments (yellow arrows) creates quasiparticles with dramatically enhanced effective mass, called heavy fermions.

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Work was performed in part at NSLS-II

Scientific Achievement

Researchers found electrons coupled to magnetism in the 2D "intermetallic" cerium silicon iodide (CeSiI).

Significance and Impact

CeSiI established as a platform for studying coupled electronic & magnetic interactions in these materials, with an eye on potential spintronics applications.

Research Details

- CeSiI consists of 2D crystalline metallic sheets coupled by weak interlayer electronic interactions; the structure essentially confines the electrons to two dimensions.
- CeSiI was studied with several techniques, including angle-resolved photoemission spectroscopy at NSLS-II's ESM beamline.
- Measurements show magnetic order near the 2D theoretical limit.