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Effects of Tunable Bloch-Inspired Spin-Orbit Interaction in the Electronic State of Sr_2RuO_4

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Abstract

The conflicting experimental and theoretical results on the properties of Sr_2RuO_4 are evidences of its complexities. The Bloch catalytic factor was introduced to investigate the varying interactions between the direction of electron spin and the orbital motion for different 'd' elements. The Bloch-inspired spin-orbit interaction (SOI) was designed and tested under the tunable longitudinal and transverse magnetizations. Some of the results correspond to recent experiments. The prevailing SOI in each case is dependent on the splitting of the 4*d* states.

Keywords

Superconductivity Spin interaction orbit Bloch