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Magnetism of the RT6Sn6 kagome metals

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Kagome metals are known for their unique electronic band structure containing flat bands and Dirac cones with topological character. This has elevated interest in kagome metals as an adaptable system to study the interplay of band topology with superconductivity, itinerant magnetism, and other charge instabilities that are driven by electronic correlations. In the RT6Sn6 kagome metals, conduction electrons within T=Cr, V, Mn kagome bilayers interacts with the local magnetic moments of interleaved rare-earth (R) triangular layers. Here, I will describe experimental neutron scattering and high-field magnetization data outlining the competing magnetic interactions and magnetic fluctuations that lead to a variety of collinear and non-collinear magnetic phases, including the discovery of dual time-reversal symmetry-breaking in the Ising ferromagnet TbV6Sn6. The manifestations of chirality in RMn6Sn6, such as fluctuation-driven scalar spin chirality, will also be discussed.

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