

Abstract Submitted
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Revising the magnetic structure and dynamics of Yttrium Iron Garnet¹ ANDREW PRINCEP, ANDREW BOOTHROYD, University of Oxford, RUSSELL EWINGS, ISIS Neutron Facility, SIMON WARD, Paul-Scherrer Institut, Switzerland, CARSTEN DUBS, INNOVENT e. V. Technologieentwicklung — Yttrium iron garnet (YIG) is the ‘miracle material’ of microwave magnetics. Since its synthesis by Geller and Gilleo in 1957, it is widely acknowledged to have contributed more to the understanding of electronic spin-wave and magnon dynamics than any other substance. Its astonishingly narrow excitation linewidth allows magnon propagation to be observed over centimetre distances, making it both a superior model system for the experimental study of fundamental aspects of microwave magnetic dynamics and an ideal platform for the development of microwave magnetic technologies. Our experiments on a large, pristine single crystal at the ISIS facility using both diffraction and time-of-flight spectroscopy have provided new results on both the magnetic structure and the excitation spectrum, which revise nearly 60 years of scientific research and will be essential insights for the fledgling scientific field of Magnonics.

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