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## **[515] Spin-orbital correlations in the van der Waals magnet CrPS<sub>4</sub> revealed by resonant inelastic X-ray scattering**

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Exfoliable magnetic van der Waals (vdW) materials have enabled the study of magnetism at the true two-dimensional limit. Bulk CrPS<sub>4</sub> is an A-type vdW antiferromagnet with strong correlation between the electronic, orbital, structural properties and the magnetic state. I will present our temperature-dependent resonant inelastic X-ray scattering (RIXS) data: the linear-dichroic RIXS intensity of one of the orbital excitations shows an order-parameter-like temperature dependence around the Néel temperature (38 K). I will discuss this temperature-dependent orbital asymmetry in relation to our multiplet simulations, and how the RIXS dichroism of this orbital excitation will allow access to the magnetic state in future RIXS investigations of exfoliated flakes of this topical material.

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