

# The power of combining various neutron spectrometer types

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Quantum materials often reveal ground states with deeply intertwined electronic charge, orbital, spin and lattice degrees of freedom. Their interplay can stabilize novel collective phenomena that can be understood by microscopic studies susceptible to the various degrees of freedom, and by their dependencies on external tuning parameters such as pressure, magnetic field and chemical substitution. In this talk I will show how the combination of various neutron spectrometers equipped with different sample environments allowed us to clarify the microscopic multiferroic properties of Ni<sub>3</sub>TeO<sub>6</sub>. Our studies show that its non-chiral crystal structure gives rise to non-reciprocal chiral low-energy magnons, whose condensation trigger a direct coupling between the various degrees of freedom.

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