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Quadrupolar interactions in UPd3 observed by inelastic neutron scattering

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UPd3 is a rare example of a compound where the low temperature ordered phase involves the alignment of electric quadrupoles of the f-electrons on neighbouring ionic sites, rather than their magnetic dipole moments. We show inelastic neutron spectra of the dispersion of crystal field excitations in UPd3, which are consistent with RPA calculations assuming quadrupolar exchange interactions between the f-electrons on the hexagonal U4+ sites.

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