

# X-ray Studies of Phonon Anomalies and Phase Transitions

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X-ray scattering has proven to be a powerful approach for studying phonon dispersion relations and phonon anomalies related to phase transitions. There are two closely related and complementary techniques: TDS (thermal diffuse scattering) and IXS (inelastic x-ray scattering). IXS measures the phonon energy directly, but the signal intensity is very low. In contrast, TDS does not rely on energy resolution and the signal intensity is much higher; the phonon energy is extracted through measured intensity distributions in  $k$  space and/or intensity variations as a function of temperature/pressure. This talk will review recent studies of various systems.