Doping (x)- and pressure-dependence of the CDW state in Cu\textsubscript{x}TiSe\textsubscript{2} using inelastic light scattering\textsuperscript{1} HARINI BARATH, MINJUNG KIM, S.L. COOPER, Dept. of Physics and Frederick Seitz Materials Research Laboratory, University of Illinois at Urbana-Champaign, Urbana, Illinois 61801, EMILIA MOROSAN, R.J. CAVA, Department of Chemistry, Princeton University, Princeton, NJ 08540, USA — TiSe\textsubscript{2} has long been known to form a rather simple commensurate charge-density-wave (CDW) below T\textsubscript{CDW} \sim 200K. Interest in this material has grown recently, however, with the discovery that Cu intercalation between the TiSe\textsubscript{2} layers \cite{1} suppresses the CDW transition, and at intermediate compositions (x \geq 0.04 in Cu\textsubscript{x}TiSe\textsubscript{2}), gives rise to a superconducting state. Consequently, Cu\textsubscript{x}TiSe\textsubscript{2} is a particularly interesting system in which to investigate the competition between CDW and superconducting correlations. In this talk, we discuss our inelastic light scattering studies of the effects of chemical tuning on the CDW state in Cu\textsubscript{x}TiSe\textsubscript{2}, which we compare to pressure-dependent studies of the CDW state in TiSe\textsubscript{2}. By monitoring both the CDW amplitude modes and phonons with chemical substitution and pressure, we are able to sensitively study the different routes to CDW melting in this interesting system. \cite{1}. E. Morosan et al., \textit{Nature Physics} \textbf{2}, 544 (2006).

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