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Investigating shape coexistence in ^{50,52,54}Cr with E0 transitions and pair conversion spectroscopy JACKSON DOWIE, TIBOR KIBEDI, Australian Natl Univ, HA HOANG, KUMAR RAJU, EIJI IDEGUCHI, RCNP, University of Osaka, ABRAHAM AVAA, iThemba LABS, and University of Witwatersrand, VERNON CHISAPI, iThemba LABS, and University of Stellenbosch, PETE JONES, iThemba LABS, AQEEL AKBER, BEN COOMBES, TOMAS ERIKSEN, MATTHEW GERATHY, TIMOTHY GRAY, GREG LANE, BRENDAN MCCORMICK, A.J. MITCHELL, ANDREW STUCHBERY, Australian Natl Univ — The phenomenon of shape coexistence, whereby excited states of an atomic nucleus exhibit shapes that deviate dramatically from their ground states, appears to be ubiquitous across the nuclear landscape. Electric monopole (E0) transitions, the only possible decay paths between $J^\pi = 0^+$ states, provide a unique probe into nuclear shape coexistence. The E0 strength is large when there is a large change in the nuclear mean-square charge radius, and when there is strong mixing between states of different deformation. The region between ^{40}Ca and ^{56}Ni is virtually unexplored from the perspective of E0 transitions. Only the ^{40,42,44,46}Ca, ^{56,58,60}Ni and ^{54}Fe have been investigated; no work has been done on the Cr isotopes to date. The 0^+ states and E0 transitions in ^{50,52,54}Cr were investigated with the Super-e pair spectrometer at the ANU using beams from the 14UD tandem accelerator. We will present the first pair spectra for ^{50,52,54}Cr and the E0 transition strengths for these nuclei.

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