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Using the Pair Distribution Function to Explore Superconductivity in BaFe2As2 ETHAN FLETCHER, Brigham Young University — Superconductors have a great potential to revolutionize energy, but conventional superconductors can only operate at temperatures near absolute zero and/or under extreme pressure. New materials showing superconductivity at higher temperatures have been discovered in recent years, yet the mechanism of superconductivity remains unknown. Research suggests that changing the symmetry of the local structure plays a large role in superconductivity in these new materials. The method of pair distribution function (PDF) analysis allows us to determine the local, short range structure at various temperatures, providing a glimpse of the behavior of superconducting materials as their local symmetry changes. We focus on data acquired from samples of BaFe2As2 analyzed using the PDF method over temperatures ranging from 2K to 300K.

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