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The effect of pressure on extreme magnetoresistance and superconductivity in LaBi FAZEL TAFTI, Boston College, MILTON TORIKACHVILI, San Diego State University, RYAN STILLWELL, BRUCE BAER, ELISSAIOS STAVROU, SAM WEIR, Lawrence Livermore National Laboratory, YOGESH VOHRA, University of Alabama, HUNG-YU YANG, EVAN MCDONNELL, Boston College, SATYA KUSHWAHA, QUINN GIBSON, ROBERT CAVA, Princeton University, JASON JEFFRIES, Lawrence Livermore National Laboratory — Extreme magnetoresistance (XMR) in topological semimetals is a recent discovery which attracts attention due to its robust appearance in a growing number of materials. To search for a relation between XMR and superconductivity, we study the effect of pressure on LaBi taking advantage of its simple structure and simple composition. By increasing pressure, we observe the disappearance of XMR followed by the appearance of superconductivity at P = 3.5 GPa. We find a region of coexistence between superconductivity and XMR in LaBi in contrast to other superconducting XMR materials. The suppression of XMR is correlated with increasing zero-field resistance instead of decreasing in-field resistance. At higher pressures, P = 11 GPa, we find a structural transition from the face center cubic lattice to a primitive tetragonal lattice, in agreement with theoretical predictions. The relationship between extreme magnetoresistance, superconductivity, and structural transition in LaBi is discussed.

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