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Superconductivity in the doped antiperovskite oxide $Sr_{3-x}SnO$
SHINGO YONEZAWA, MOHAMED OUDAH, ATSUTOSHI IKEDA, Graduate School of Science, Kyoto University, JAN NIKLAS HAUSMANN, Graduate School of Science, Kyoto University; Faculty of Mathematics and Natural Sciences, Humboldt-Universitat zu Berlin,, TOSHIYUKI FUKUMOTO, Graduate School of Engineering, Nagoya University, SHINGO KOBAYASHI, Graduate School of Engineering, Nagoya University; Institute for Advanced Research, Nagoya University,, MASATOSHI SATO, Yukawa Institute for Theoretical Physics, Kyoto University, YOSHITERU MAENO, Graduate School of Science, Kyoto University — In the antiperovskite oxide A_3BO, oxygen atoms occupy the center of the ordinary perovskite structure and the A metal octahedrally coordinate the oxygen. More interestingly, the B metal exhibits a negative valence state, which is unusual for metallic ions. Because of such structural and electrical uniqueness, the antiperovskite oxides attracts much attention these days. In particular, the prediction of Dirac semimetal states in Ca_3PbO and its related compounds triggered extensive investigation [1]. Here, we report discovery of superconductivity in $Sr_{3-x}SnO$, based on the observation of zero resistivity and Meissner screening [2]. To the best of our knowledge, this compound is the first superconductor among the known antiperovskite oxides. In addition, this compound may host topological superconductivity, because of the strong orbital mixing of the underlying electronic state.
[1] T. Kariyado and M. Ogata, J. Phys. Soc. Jpn. **80**, 083704 (2011).
[2] M. Oudah *et al.*, Nature Comm. **7**, 13617 (2016).

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