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Electric field control of thermoelectric effect in oxide interface $LaAlO_3/SrTiO_3$ TOMOYA ASABA, FAN YU, GANG LI, BENJAMIN LAWSON, COLIN TINSMAN, University of Michigan, JOCHEN MANNHART, Max Planck Institute for Solid State Research, LU LI, University of Michigan — Oxide interface $LaAlO_3/SrTiO_3$ (LAO/STO) has been attracting huge interest and the origin of the magnetic-field-induced phase transition is yet to be understood. However, thermoelectric power studies, a powerful tool for detecting phase transitions, have been sparsely reported so far. In this study we measured the carrier density dependence of thermopower to understand the origin of this phase transition. Below critical carrier density, thermopower is found to increase dramatically while the interface is still conductive. These results may not only help in understanding the physics around the phase transition but also shed light on the significance of this system as a thermoelectric material.

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