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**Electrical control of direction of orbital stripes in charge-orbital ordered state of single-layered manganite  $\text{La}_{1/2}\text{Sr}_{3/2}\text{MnO}_4$**  SHOTA KONNO, Department of Physics, Tohoku University, KOUJI TANIGUCHI, HAJIME SAGAYAMA, TAKA-HISA ARIMA, Institute of Multidisciplinary Research for Advanced Materials, Tohoku University — Electrical control of the localized electron such as an electric-field induced metal-insulator transition in charge-orbital ordered (COO) state of perovskite-related manganese oxides has been intensively studied, since the large electroresistance effect in  $\text{Pr}_{0.7}\text{Ca}_{0.3}\text{MnO}_3$  was reported[1]. Moreover, the formation of orbital stripes in the COO state gives rise to in-plane anisotropies in the electrical, magnetic, and optical properties. However, there are few reports on controlling anisotropic properties in the COO state. We report an electric-field effect on the in-plane anisotropy in the COO state of a layered manganite  $\text{La}_{1/2}\text{Sr}_{3/2}\text{MnO}_4$ . After applying an electric field, a 90-degree rotation of COO states has been observed by using a polarizing microscope. A drastic change of the volumes of two COO domains was confirmed by means of synchrotron X-ray diffraction. [1]A. Asamitsu *et al.*, Nature **388**, 50(1997).

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