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Progress on the new solid polarized target by using the symmetry of Perovskite structure

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It is widely known that a solid polarized target is a powerful device for researches in spin physics, such as investigation of spin structure of nucleons, nuclear structure, and spin correlation in nuclear reactions. Although about 50 years have already passed since the beginning of studies on the Dynamic Nuclear polarization(DNP), the solid polarized targets are still limited to protons and deuterons in practical beam experiments. A possible method for breaking the above situation is the DNP by using the symmetry of Perovskite structure. This method holds possibilities for realizing the practical polarized targets of nuclei with high quadrupole moments, which are expected as completely new tools for opening up potentialities in Spin Physics. The NOPTREX collaboration applies it to the development of polarized lanthanum(La) targets for discovery of Time-reversal violating effects with ultra-high sensitivity. In this presentation, we will not only introduce the method and its features, but also report current status of development of the polarized La target in the NOPTREX project.

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