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Strain control of magnetic structure in $Sr_3Ir_2O_7$ CHOONG H. KIM, IBS-CCES & Seoul Nat'l Univ. — We have studied from first principles the structural, electronic, and magnetic properties of the layered-perovskite iridates $Sr_3Ir_2O_7$ as a function of epitaxial strain. In $Sr_3Ir_2O_7$, bilayer iridates, an easy c-axis collinear antiferromagnetic structure have been reported, a significant constrast to single layer Sr_2IrO_4 with in-plane canted moments. This behavior is understood by competition among intra- and interlayer bond-directional pseudodipolar interactions. From our first-principles calculations, we show that these two energy scales are controllable via strain to drive spin-flop transition.

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