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Large non-collinearity and spin-reorientation in the novel Mn_2RhSn Heusler magnet O. MESHCHERIAKOVA, S. CHADOV, A. NAYAK, Max Planck Institute for Chemical Physics of Solids, Dresden, Germany, U.K. ROESSLER, Institute for Theoretical Solid State Physics, Leibniz Institute for Solid State and Materials Research, Dresden, Germany, J. KUEBLER, Institute of Solid State Physics, Technical University of Darmstadt, Darmstadt, Germany, G. ANDRE, Laboratoire Leon Brillouin, CEA-CNRS Saclay, Gif-sur-Yvette, France, A.A. TSIRLIN, National Institute of Chemical Physics and Biophysics, Akadeemia tee 23, 12618 Tallinn, Estonia, C. FELSER, Max Planck Institute for Chemical Physics of Solids, Dresden, Germany — Heusler compounds is a large class of materials, which exhibits diverse fundamental phenomena, together with the possibility of their specific tailoring for various engineering tasks. Present work discusses the magnetic noncollinearity in the family of noncentrosymmetric Mn_2-based Heusler compounds. According to the experimental and theoretical results, Mn_2YZ Heusler family is suspected to provide promising candidates for the formation of the skyrmion lattice. The work is focused on Mn_2RhSn bulk polycrystalline sample, which serves as a prototype. It crystallizes in the tetragonal noncentrosymmetric structure (No. 119, *I-4m2*), which enables the anisotropic DM coupling. Additional short-range modulation, induced by the competing nearest and next-nearest interplanes Heisenberg exchange, is suppressed above the 80 K. This allows to develop the long-range modulations in the ideal ferrimagnetic structure within the *ab* crystallographic planes.

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