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Dzyaloshinskii-Moriya induced inter-chain frustration in a new spin-chain compound WOLFRAM LORENZ, MANUEL HAELG, KIRILL YU. POVAROV[1], ANDREY ZHELUDEV, Neutron Scattering and Magnetism, Laboratory for Solid State Physics, ETH Zurich, Switzerland — We present a first study of the Dzyaloshinski-Moriya spin-chain material $K_2CuSO_4Br_2$, highlighting the peculiar frustration of inter-chain couplings between nearest neighbor chains in this compound. Bulk magnetization and specific heat data are found well consistent with spin-chain models. Inelastic neutron scattering data support the pronounced one-dimensionality of the compound. In detail, intra-chain exchange amounts to 20.4 K, yet magnetic long-range-order sets in only at 100 mK. An extraordinary magnetic phase diagram is observed, which may be attributed to inter-chain frustration of helical intra-chain correlations. The relevant Dzyaloshinskii-Moriya exchange is evidenced by ESR-data. Funding by SNSF division 2 is acknowledged.

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