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Double Magnetic Field-induced Phase Transitions in the Spin-1/2 Alternating Chain System $AgVOAsO_4$ FRANZISKA WEICKERT, Los Alamos Natl. Lab., Los Alamos, NM 87545, ALEXANDER A. TSIRLIN, MONIKA GAMZA, MPI for Chemical Physics of Solids, 01087 Dresden, Germany, ALBIN DEMUER, GHMFL, CNRS, 38042 Grenoble, France, ALEXANDER STEPPKE, MPI for Chemical Physics of Solids, 01087 Dresden, Germany, RAMESH NATH, Ames Laboratory, Ames, IA 50011, HELGE ROSNER, MPI for Chemical Physics of Solids, 01087 Dresden, Germany — The new spin-1/2 compound AgVOAsO4 shows one-dimensional magnetic behavior and a spin gap of about 14 K. The crystal structure of AgVOAsO4 is rather complex with alternating spin chains aligned along the [110] and [110] direction. The experimental magnetic susceptibility yields values of 40 K and 26 K for J1 and J1′, respectively. The magnetization curve taken at 1.5 K cannot be fully described by only two coupling constants, which points to sizable inter chain coupling. Furthermore, the magnetization shows the closing of the spin gap at Hc1 =10.5 T and a saturation at Hc2=48.5 T. In the talk, we report the magnetic field - temperature (H-T) phase diagram of AgVOAsO4 measured by specific heat and magnetization experiments. The specific heat taken in high DC fields up to 28 T reveals a distinct double anomaly around 4 K and 2 K. Magnetization experiments follow this double structure down to mk temperatures and reveal a variety of anomalies close to the critical field Hc1 in AgVOAsO4.

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