

## Effects of *d*-electron spins on the transport properties of (DIETSe)<sub>2</sub>FeX<sub>4</sub> [X = Cl, Br]

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We present the low-temperature transport properties of the  $\pi$ -*d* hybrid magnetic molecular conductors (DIETSe)<sub>2</sub>FeX<sub>4</sub> [X = Cl, Br]. These compounds are very good materials to study the effects of *d*-electron spins on the quasi-one dimensional (Q1D)  $\pi$ -electron system having spin-density-wave (SDW) instability.

The existence of the Q1D Fermi surface was confirmed by the observation of Lebed resonance in the angular dependent magnetoresistance (ADMR). We also observed anomalous ADMR due to the spin-flop transition of *d*-electron spins. In the case of Cl salt, quite unusual hysteresis was appeared in the ADMR only at low pressure region. It is closely related to the spin-flop induced memory phenomena in this salt. Moreover, the transport properties are found to be strongly dependent on the current direction.

Based on the temperature-pressure phase diagrams and magnetotransport properties of both salts, we will discuss the nature of their electronic states and the role of the internal degrees of freedom in SDW of  $\pi$ -electrons and magnetism of *d*-electron spins.