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High field ESR on tau phase conductor –from GHz to THz-.[1] TAKAHISA TOKUMOTO, J. VAN TOL, L.-C. BRUNEL, D. GRAF, J.S. BROOKS, FSU/NHMFL, Y. OSHIMA, IMR, Tohoku Univ., G. PAPAVASSILIOU, NHRF, Greece — Organic conductors have exotic electronic and magnetic properties ranging from the possibility of unconventional, anisotropic superconductivity, to the observation of a variety of ground states such as charge-density waves, spin-density waves, field-induced spin density waves, and the observation of quantum Hall effect, or a spin-Peierls state. One example is tau - [P-(S, S) – DMEDT-TTF]2(AuBr2)1+y (∼0.75). The crystal structure of this quasi two dimensional organic compound is tetragonal with unit cell dimensions: a = 7.3546 A and c = 67.977 A. Even though there are no magnetic ions in the system, several measurements indicate magnetic ordering at low temperature and under magnetic fields. Furthermore, this compound exhibits field induced hysteretic MI transition above 38T with an inkling of weak ferromagnetism. We investigate the origin of the magnetic behavior by conducting a CW ESR study from 90GHz to 1.2 THz. Results and analysis will be presented.

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Takahisa Tokumoto
Florida State Univ./NHMFL

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