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Multiple spin sites in an organic conductor without magnetic ions.[1] TAKAHISA TOKUMOTO, FSU/NHMFL, YUGO OSHIMA, Tohoku University, Japan, DAVID GRAF, NHMFL, JAMES BROOKS, FSU/NHMFL, JOHAN VAN TOL, NHMFL, LOIUS-CLAUDE BRUNEL, NHMFL, GEORGE PAPAVASSILLIOU, National Hellenic Research Foundation, Greece — The anisotropic low dimensional organic conductors are attractive because of the variety of ground states with unusual and exotic electronic properties. One of them is tau-[P-(*S*,*S*)-DMEDT-TTF]$_2$(AuBr$_2$)$_{1+y}$ [where y$\sim$0.75 and P-(*S*,*S*)-DMEDT-TTF stands for pyrazino-(*S*,*S*)-dimethyl-ethylenedithio-tetrathiafulvane], which has tetragonal crystal structure with unit cell dimensions **a**=**b**=7.3546 Å and **c**=67.977 Å[1]. Even though there are no magnetic ions in the compound, transport measurements show magnetic ordering at low temperature and in magnetic fields. To investigate the origin of the magnetic behavior, we are conducting an ESR study. We do observe multiple resonances which indicate the existence of the multiple spins although the system does not contain magnetic ions. Moreover, the in-plane angular dependent ESR measurements reveal 4 fold symmetry. Both in-plane and out of plane ESR signal show evidence of antiferromagnetic behavior below 12 K. It is possible that the ion stoichiometric charge transfer (1+y) is the origin of the magnetic effects. Further analysis will be presented.

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