Abstract Submitted
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**TCP, a new quasi-one-dimensional conducting platinate: DC and NMR studies**[1] J.A. ALEXANDER, R.I. LEATHERBURY, O. GAFAROV, A.A. GAPUD, A.P. WEBER, L. PHAM, R.E. SYKORA, A. KHAN, University of South Alabama, A.P. REYES, P. KUHNS, National High Magnetic Field Laboratory — $Cs_4[Pt(CN)_4](CF_3SO_3)_2$, or TCP, is the newest member of the family of quasi-one-dimensional conducting platinates that includes the widely studied $K_2[Pt(CN)_4]Br_{0.30}3(H_2O)$ (KCP) – best-known for its metal-insulator transition consistent with a Peierls instability. Unlike KCP, however, we have found properties unique to TCP. X-ray diffraction shows longer Pt-Pt separations, and undergoes subtle change with cooling. DC resistivity measurements presented technical challenges that had to be resolved, but in the end revealed a more highly insulating phase at room temperature, and the temperature dependence of resistivity has an anomalous "peak" at around 150 K. NMR also presented a technical challenge in that the $^{195}$Pt nucleus, which had been successfully used for NMR studies on KCP, did not produce a usable signal in TCP, wherein we utilized the peripheral $^{133}$Cs nuclei instead. Quadrupole splitting of spin states of $^{133}$Cs measured as a function of orientation showed consistency with the angular dependence expected of the known symmetry axes of $^{133}$Cs. Preliminary measurements of longitudinal relaxation time T1 also reveal an anomalous temperature dependence in the vicinity of 150 K. All these considerations point to a possible structural transformation, as will be discussed.

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