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Study of the Fermi velocity and scattering time by periodic orbit resonance in the quasi-one-dimensional conductor $(TMTSF)_2ClO_4$ S. TAKAHASHI, S. HILL, Department of Physics, University of Florida, Gainesville, FL 32611, S. TAKASAKI, J. YAMADA, H. ANZAI, Department of Material Science, Graduate School of Science, Himeji Institute of Technology, Kamigori-cho, Ako-gun, Hyogo 678-1297, Japan — $(TMTSF)_2ClO_4$ belongs to the family of quasi-one- dimensional (Q1D) Bechgaard salts, and is one of the most widely studied organic conductors because of its variety of exotic ground states, which may be tuned by applying pressure, magnetic field, or by employing different cooling processes (relaxed and quenched states). These phases include: metallic, insulating, p-wave superconducting, and field-induced-spin-density-wave. We recently observed periodic orbit resonances (POR) in $(TMTSF)_2ClO_4$ (a form of Q1D cyclotron resonance).[1] Studies of the angle-dependence of the POR enable us to determine the Fermi velocity, v_F, and the scattering time, τ. In this talk, we will discuss the dependence of v_F and τ on the cooling process, and their relation to the superconducting critical temperature.

[1]S. Takahashi *et al.*, cond-mat/0404545 (2004)

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