Giant Nernst Effect in (TMTSF)$_2$PF$_6$ WEIDA WU, Department of Physics, University of Texas at Austin, Austin, TX 78723, PAUL CHAIKIN, Department of Physics, Princeton University, Princeton, NJ 08544 — Here we present a detailed study of the Nernst effect in (TMTSF)$_2$PF$_6$, where giant resonant-like Nernst oscillations were found when a magnetic field is aligned with magic angles (inter-chain directions). The amplitude of Nernst signal is order of 100 µV/K at H~7.5T and T~1K. The Nernst resonance at H//c rises gradually as T is lowered, reaches a peak at T~1K and then falls sharply to zero around 150mK. The Nernst signal is a highly non-linear function of H. This can be partially explained by the large magneto-resistance. The Nernst resonance has a weak pressure dependence. The sign-change of Nernst effect upon rotation through the magic angles suggests that the transport in (TMTSF)$_2$PF$_6$ is effectively coherent only in planes and only when these magic angle planes are parallel to the applied field.

1W. Wu et al, PRL 91, 056601 (2003)