Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Acoustic properties of quasi-one-dimensional organic conductor $(TMTSF)_2ClO_4$ in the relaxed state: Superconductivity and FISDW anomalies. ALEXANDRE LANGLOIS, MARIO POIRIER, CLAUDE BOURBONNAIS, Universite de Sherbrooke, KLAUS BECHGAARD, Risoe National Laboratory — Through competing electronic instabilities, the anion sublattice plays an important role in the rich phase diagram of the Bechgaard salts. In the quasi-one-dimensional organic conductor $(TMTSF)_2ClO_4$, anion ordering at 24 K affects the nesting properties of the Fermi surface and controls the stability of the superconducting phase below 1.2 K at ambient pressure. Moreover, the field induced spin density wave phases FISDW, one of the several features induced by a magnetic field in this compound, are also sensitive to the symmetry of the anions. In order to address the coupling issue between the lattice and these electronic instabilities, we have performed the first ultrasonic measurements on $(TMTSF)_2ClO_4$ in the relaxed state below 4 K using longitudinal and transverses waves (30-500 MHz). If low-frequency vibrating reed experiments have revealed magneto-elastic anomalies in the FISDW phases [1], the superconducting one was never investigated by similar techniques. We report anomalies in the ultrasonic velocity and attenuation for the superconducting and the FISDW phases. The coupling of these phases to the lattice is discussed in relation with the known T-B phase diagram. [1] X.D. Shi *et al.*, Phys. Rev. B. 50, 1984 (1994).

Mario Poirier
Universite de Sherbrooke

Date submitted: 20 Nov 2007 Electronic form version 1.4