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Scaling Behavior of the Longitudinal and Transverse Transport in Quasi One-Dimensional Organic Conductors MARTIN DRESSEL, KONSTANTIN PETUKHOV, BELAL SALAMEH, PEDRO ZORNOZA, Universitat Stuttgart, Germany, THIERRY GIAMARCHI, DPMC, University Geneva, Switzerland — We report on dc and microwave experiments of the low-dimensional organic conductors $(TMTSF)_2PF_6$ and $(TMTSF)_2ClO_4$ along the a, b', and c^* directions. In the normal state of $(TMTSF)_2PF_6$ below $T = 70$ K, the dc resistivity follows a power-law with ρ_a and $\rho_{b'}$ proportional to T^2 while $\rho_{c^*} \propto T$. Above $T = 100$ K the exponents extracted from the data for the a and c^* axes are consistent with what is to be expected for a system of coupled one-dimensional chains (Luttinger liquid) and a dimensional crossover at a temperature of about 100 K. The b' axis shows anomalous exponents that could be attributed to a large crossover between these two regimes. The contactless microwave measurements of single crystals along the b'-axis reveal an anomaly between 25 and 55 K which is not understood yet. The organic superconductor $(TMTSF)_2ClO_4$ is more a two-dimensional metal with an anisotropy $\rho_a/\rho_{b'}$ of approximately 2 at all temperatures. Such a low anisotropy is unexpected in view of the transfer integrals. Slight indications to one-dimensionality are found in the temperature dependent transport only above 200 K. Even along the least conducting c^* direction no region with semiconducting behavior is revealed up to room temperature.

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