**THE ION AND ELECTRON TEMPERATURES ACROSS THE QUASI-STATIONARY CONE OF THE UNSTABLE PLASMA WAVES**

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Coordinated STARE-EISCAT data from the ERRRIS campaign are used to study the flow angle dependence of threshold (SNR < 1) ionospheric parameters controlling the STARE radar echo appearance. The electron (Te) and ion (Ti) temperatures are analyzed as averaged within the Finnish STARE radar echo layer and over 30 degree flow angle bins. It is found that:

1) A quasi-stationary cone with about 45 degree half-width permanently exists within the radar echo layer for small (near-threshold radar echo) level of the DC ionospheric electric fields. Standard deviation of the Ti (Te) sharply (2-5 times) increases near the negative (positive) flow angle edge of the cone;
2) the temperatures are minimal in the center of the cone while their local maximums are at the edges of the cone; the temperatures decrease beyond the cone limits;
3) both temperatures are essentially flow angle asymmetric. Ti (Te) has its absolute maximum at -45 (+45 ) degree flow angle bin. As the result, a cooling of electrons relatively to ions stationary exists near the negative flow angle edge of the cone. The difference (Ti-Te) is of about 50 K degrees;

The electron cooling is discussed in terms of the classical thermoelectricity effects (Peltier, Ranque) as applied to the Pedersen ion and electron currents transverse to the edges of the cone.