

On the VHF radar echoes from midnight aurora

A. Kozlovsky

University of Oulu, Sodankyla Geophysical Observatory, Sodankyla, Finland

e-mail: Alexander.Kozlovsky@oulu.fi

We present combined optical and VHF (36.9 MHz) radar observations in Sodankyla Geophysical Observatory, and report on the unexpected echoes, which the SKiYMET meteor radar sometimes detects at low elevation from the midnight aurora occurring on the northern horizon. These echoes show a near-zero Doppler shift, relatively low power, sharp rising to the power peak, short (less than 2s) lifetime, and abrupt non-exponential decay of the ionospheric irregularities. Such features suggest strong Langmuir turbulence and Bragg scattering from non-propagating density fluctuations (cavitons) in the region of auroral precipitation and field-aligned currents.