

# PROPAGATING LONGITUDINAL WAVES OVER SUNSPOTS, OBSERVED IN MICROWAVE AND EUV

R. A. Sych<sup>1</sup> and V. M. Nakariakov<sup>2</sup>

<sup>1</sup>*Institute of Solar-Terrestrial Physics, 126, Lermontov St., Irkutsk, Russia;*

<sup>2</sup>*Physics Department, University of Warwick, Coventry CV4 7AL, UK*

Compressible perturbations with the period of about 3 min, observed over the isolated sunspot NOAA 0756 on the 1st to the 4th of May, 2005 are studied in the 17 GHz microwave band with the Nobeyama Radioheliograph and in 171Å pass band of TRACE. The global wavelet spectra of the signals demonstrated the presence of a high-quality peak at about 3 min. This spectral peak remains detected during all the observation in both microwave and EUV observational channels. The fine spatial, temporal and phase structure of the oscillation was determined with the Pixelised Wavelet Filtering method. It was found that the 3 min oscillations are situated in two sources which are spatially separated with respect to the central part of the sunspot. The sources coincide with the footpoints of extended coronal structures seen in 171Å, and confirmed by the potential extrapolation of photospheric magnetic sources. The projected speed of the compressible disturbances is estimated as 70 km/s, which is consistent with the expected speed of the slow magnetoacoustic (longitudinal) waves in the EUV coronal structures. The EUV and microwave disturbances are found to propagate in the same direction, along the magnetic field lines upwards to the corona, possibly along large coronal loops. Also, we found a good spatial and time correlation of the 3 min disturbances at the chromospheric and coronal levels, observed in the microwave and EUV channels, respectively.