

SURVEY OF SCHUMANN RESONANCE ELECTRIC FIELD COMPONENT MEASUREMENTS AT MODRA OBSERVATORY IN 2006 – 2008

ADRIENA ONDRÁŠKOVÁ, Sebastián Ševčík, Pavel Kostecký

Department of Astronomy, Physics of the Earth and Meteorology, Faculty of Mathematics, Physics and Informatics, Comenius University, Bratislava, Slovakia

The cumulative results of monitoring of the electric field component of the Schumann resonances obtained at Astronomical and Geophysical Observatory of Comenius University, Modra, western Slovakia, are presented. The vertical electric field component intensity is measured permanently except relatively rare interruptions due to power line outages or very unfavourable weather conditions. 240 data intervals (every 6 minutes) are collected and subsequently processed by least-square method using the sum of Lorentz-type functions to determine principal mode parameters – peak frequency, relative amplitude and quality factor of the first four Schumann resonance modes. The methodology of data acquisition and processing (signal conditioning, prefiltering, analog suppression of 50 Hz frequency by notch filter and the criteria for “goodness” of the computed mode parameters) is shortly described. The results of numerical fitting are excluded from the analysis in cases when the values of parameters being grossly outside the reasonable physical limits. The monthly averaged diurnal variations of mode peak frequencies are presented for every month of the year. Moreover, the maps of diurnal-seasonal variations for the peak frequencies, relative peak amplitudes and quality factors for the first four Schumann resonance eigenmodes are given. The diurnal, seasonal and interannual variations of parameters in period 2001 – 2008 are discussed (long-term observations in 2001–2005 are given in Ondraskova et al., Radio Science, 42, 2007).

Schumann resonances, diurnal, seasonal and annual variations

Adriena Ondrášková (ondraskova@fmph.uniba.sk), Department of Astronomy, Physics of the Earth and Meteorology, Faculty of Mathematics, Physics and Informatics, Comenius University, Mlynska dolina F-1, 842 48 Bratislava, Slovakia