

**LONG-TERM OSCILLATIONS OF SUNSPOTS
DETECTED BY DOPPLER SHIFTS AND ZEEMAN
BROADENING ON DIGITAL SPECTROHELIOGRAMS**

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Presented is developed in Central (Pulkovo) Astronomical Observatory the method of direct registration of Dopler shifts, as well as Zeeman broadening of spectral lines, on optical digital spectrograms of active regions on the Sun was used to study the oscillation of sunspots and magnetic elements in their vicinity. Besides the well known 3-5 minutes oscillations, the long-term oscillations with a period about 80 min were found in sunspots and magnetic elements of surroundings: the last effect reveals only on rather long (more than 4 hours) consequent series of observations. These oscillations are interpreted in the frame of Shallow sunspot model as vertical-radial periodical displacements of the entire sunspot (or magnetic element). They are eigen oscillations of the system and are excited by perturbations of surrounding turbulent medium (i.e. photosphere and convective zone).