



Variability of the differential rotation of the magnetic field through solar cycles and its connection with

E.Gavryuseva (1, 2)

(1) Institute for Nuclear Research, Moscow, Russia and

(2) Arcetri Astrophysical Observatory, Florence, Italy

(elena.gavryuseva@gmail.com / Phone: 39 055 2752 225)

Text of Abstract

- Differential rotational rate of the magnetic field measured in the photosphere

was calculated and its temporal dependence was studied using two independent methods on the base of the WSO observations taken over last three cycles of solar activity.

It was found that the rotational rate has a periodical character:

at high latitudes it is closely related to the solar activity cycle.

The shorter periodicities of 5-6 years about has been revealed in the middle and low latitudes in addition to the torsional waves.

The variability of solar magnetic field rotation with periods of 1 and 1.25 year have been analyzed in detail and the results are presented in comparison with the helioseismological findings.

Comparison with the internal rotation was performed.

The depth where the large scale magnetic field is originated from has been determined.