



Photospheric magnetic fields: latitudinal distribution and time development

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Groups of the photospheric magnetic fields with different strength are investigated using synoptic maps of Kitt Peak observatory. The latitudinal profiles of magnetic field (dependence of the magnetic flux on heliolatitude) are considered separately for each strength interval of 5 G (0-5 G, 5-10 G, etc.) on the basis of synoptic maps averaged over the period of 1976-2003.

Characteristic heliolatitudes are found (5° , 40° , and 60°), which divide areas of localization of magnetic fields with different strengths. The most significant changes of the latitudinal structure of magnetic fields are observed for rather weak fields (less than 50 G). The latitudinal distributions of stronger fields practically do not depend on strength and are defined by the dominating contribution of sunspot fields.

The obtained results show that the latitudinal distribution of magnetic fields considerably changes at certain values of the field strength: 5 G, 15 G, and 50 G. The magnetic flux for the groups of fields differing in strength decrease monotonically with increasing strength, the fluxes of the southern hemisphere exceeding fluxes of the northern hemisphere. The weakest fields (less than 5 G) form a special group which is in antiphase with stronger fields both in localization and in time dependence.