

## Magnetic, paleomagnetic and palynologic studies of Paleolithic depositions of the Akhshtyrskaya cave (Russia)

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### Abstract

The paper presents the results of experimental rock-magnetic, paleomagnetic and palynologic study of Paleolithic sediments sampled along two profiles in the Akhshtyrskaya cave, situated in the vicinity of Black Sea shore. In the upper part of profiles, some magnetite was observed; in the middle and lower parts, strongly oxidized non-stoichiometric magnetite and hematite prevail. Thin maghemite covers on the surface of fine magnetite grains are present in the majority of specimens. Natural remanence has one characteristic component (CHRM), mostly of chemical origin, although in few specimens containing magnetite it may be sedimentary. Directions of CHRM obtained by standard paleomagnetic methods revealed anomalous pattern only in layer 3/2, which is slightly older than the overlying layer 3/1 whose age was established as  $(35\pm 2)\times 10^3$  years BP by the U-Th method. This suggests that this paleomagnetic anomaly (PMA) can be correlated with Kargapolovo excursion dated on about  $(45-39)\times 10^3$  years BP. In the remaining overlying and underlying layers, directions of CHRM are grouped around the present geomagnetic field. Depth distributions of scalar magnetic parameters generally coincide with the lithological division of the profiles. Palynologic study revealed the presence of 22 pollen zones. Five thermomeres separated with colder periods were found in the middle and lower parts of profile. The non-magnetite composition of magnetic fraction of the majority of studied sediments – oxidized nonstoichiometric magnetite and hematite – resulted in the lack of correlations between paleoclimatic and scalar magnetic characteristics.

**Key words:** paleomagnetism, palynology, Quaternary cave sediments.