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Elastic-anisotropic properties of rocks along the Finnish Drill Hole (OKU) section in the depth range down to 1 km

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The Finnish drill hole OKU was drilled in the south-eastern Baltic Shield (Finland). The drill hole limiting depth is 2516m. The goal of investigations was determination of elastic and non-elastic characteristics of 14 rock samples taken within 1.0km depth. The determinations were done on the basis of the latest improvement of the acoustopolarization method with devices for determining elastic properties [1]. The study of the rock sample properties from the drill hole section showed that they are all elastic anisotropic and pertain to the transverse-isotropic and orthorhombic symmetry types. A slight change in the compression and shear wave velocities with depth can be observed. The effect of linear acoustic anisotropic absorption has been registered in the samples. The nature of this effect manifestation is related to the presence of microcracks of the natural character. The effect of depolarization of shear waves was registered in some samples which suggests the presence of the angular unconformity between the directions of the LAAA elements and elastic symmetry elements. The pattern of change in the anisotropy factors for compression and shear waves with depth is manifested in a similar way.

REFERENCES

1. Gorbatsevich F.F. Acoustopolariscopy of rocks. Apatity, Acad. Sciences, 1995, 204 p.