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Comprehensive geoneutrino analysis with Borexino detector data and Earth radiogenic heat.

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The results of new comprehensive data analyses of geoneutrino measurements in Borexino experiment at underground Gran Sasso national laboratory (LNGS) are presented. The analysis is the result of 3262.74 days of data between December 2007 and April 2019 with improved analysis techniques and optimized data selection, which includes enlarged fiducial volume and sophisticated cosmogenic veto. Geo-neutrino fluxes generated in the processes of radioactive decay of elements in the depths of the Earth carry information about the radioactive elements inside our planet and its geological structure. The measured geoneutrino signal at LNGS is compared to the expectations of different geological models. The extraction of the mantle signal using knowledge of the signal from the bulk lithosphere and the consequences of the new geoneutrino measurement with respect to the Earth's radiogenic heat are discussed.

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