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Potassium influence on Earth's mantle convection and Borexino data

We provide the indication of high flux of ^{40}K geo-antineutrino and geo-neutrino (^{40}K-geo-($\bar{\nu}+\nu$)) with Borexino Phase III data. Simultaneously we obtained the count rates of events from ^{7}Be, pep and CNO solar neutrinos. MC pseudo-experiments showed that the case of high metallicity Sun and absence of ^{40}K-geo-($\bar{\nu}+\nu$) can not imitate the result of multivariate fit analysis of Borexino Phase III data with introducing ^{40}K-geo-($\bar{\nu}+\nu$) events. We also provide arguments for the high abundance of potassium in the Earth. Large amounts of ^{40}K should produce a significant heat flow that should affect the Earth's internal processes. We present the results of modeling mantle convection taking into account excess heat from ^{40}K.

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