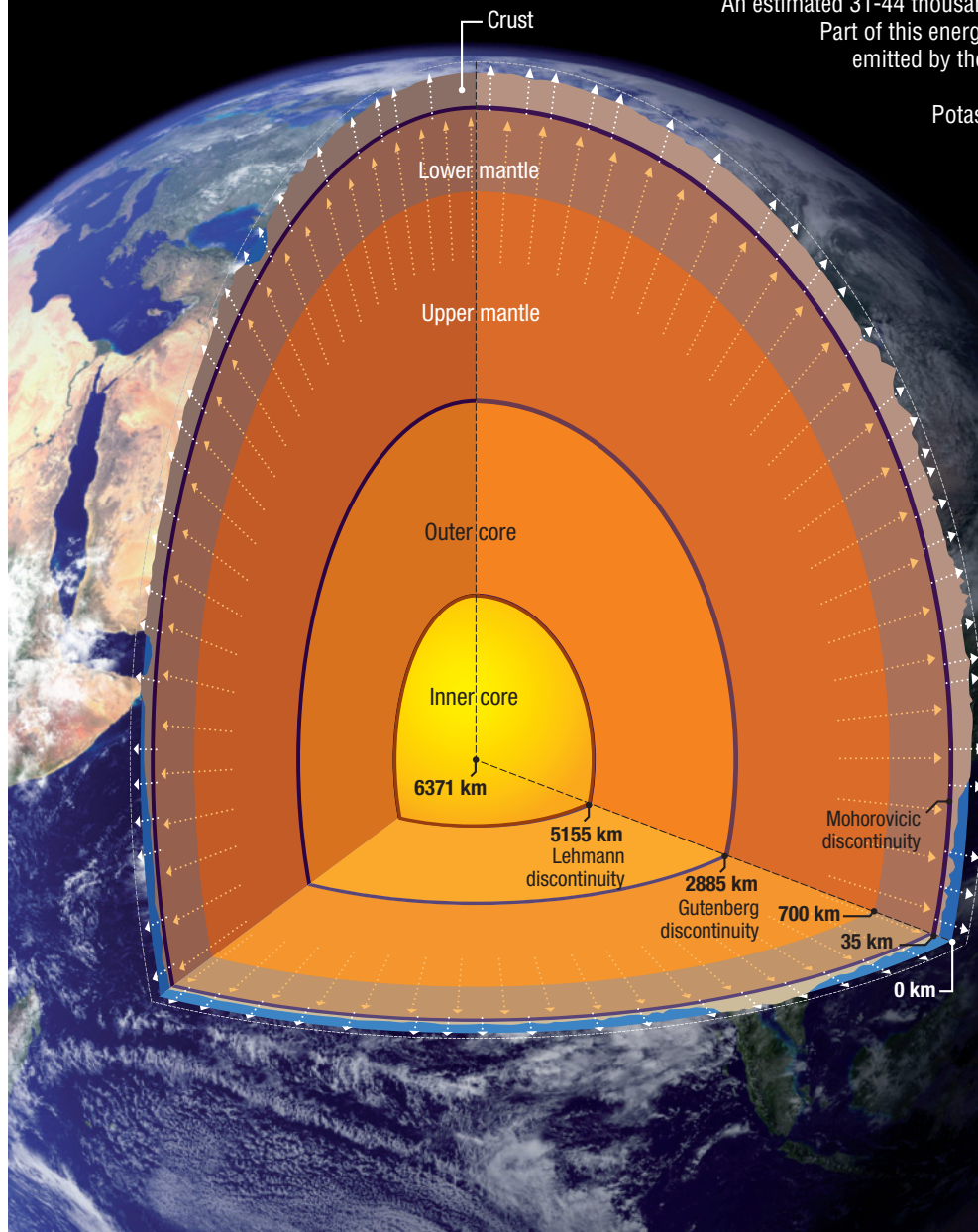


BOREXINO SEES GEO-NEUTRINOS

Borexino is an international project led by Italian researchers; the project involves around 100 scholars from six countries. For the first time anywhere,

Borexino has observed geo-neutrinos, particles that are emitted by the spontaneous decay of radioactive nuclei located within the Earth.

THE EARTH'S INTERIOR



THE EARTH'S THERMAL POWER

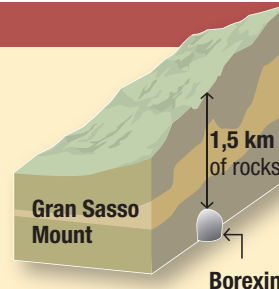
An estimated 31-44 thousands of billions of Watts. Part of this energy derives from the heat emitted by the spontaneous decay of Uranium, Thorium, and Potassium-40 present in the planet's inner strata.

GEO-NEUTRINOS

Many radioactive decays emit anti-neutrinos, that is, the anti-particles of neutrinos. Those produced within the Earth are known as "geo-neutrinos", whose study constitutes the only method for understanding what happens deep within our planet.

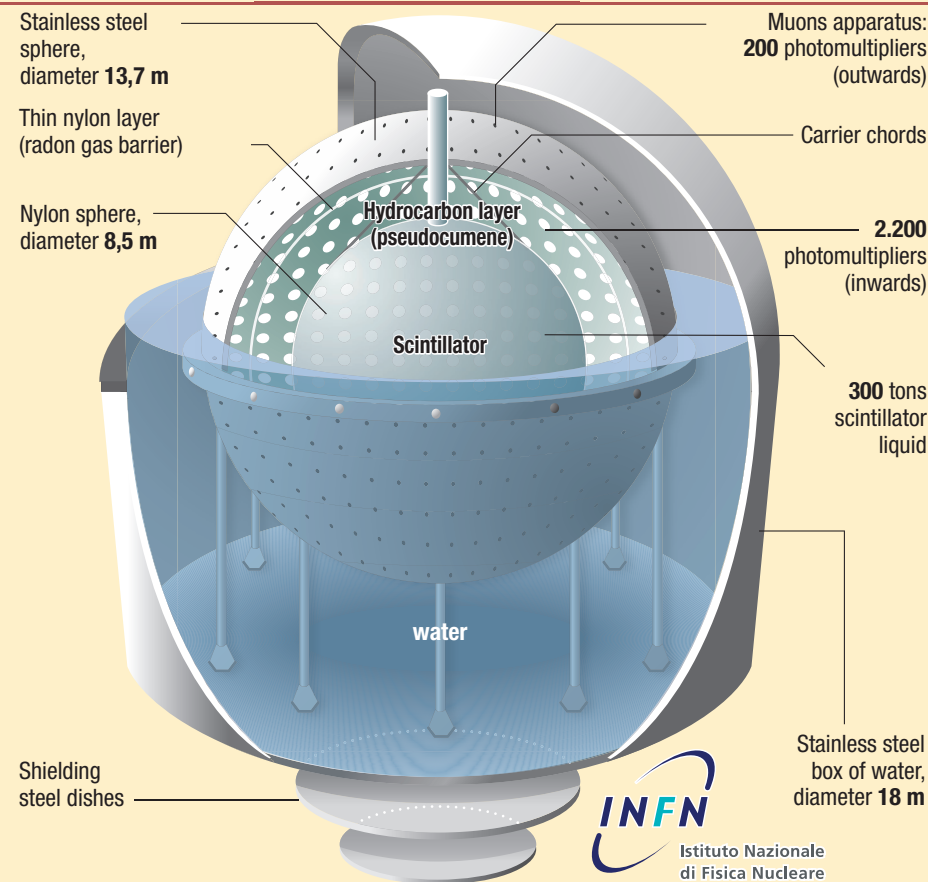
centimetri.it

Where it is



How it works

Neutrinos and antineutrinos are particles with no electric charge and a very small mass that do not interact with other constituents of matter. They are the only particles able to pass undisturbed through the rock and reach the place where they are studied



■ Borexino is similar to a "matrioska", dipped in 2.400 tons of highly purified water. Inside it, a steel sphere contains 1000 tons of a hydrocarbon (pseudocumene) and within a smaller nylon sphere are 300 tons of scintillating liquid

■ In the innermost sphere neutrinos interact with the scintillator liquid and produce small flashes of light. Borexino observes dozens of these signals every day



■ The photomultipliers, which are ultra-sensitive technological eyes, see and record the light flashes produced by the neutrinos