INTERSTELLAR MEDIUM NEAR EARTH – MAPPED THROUGH LIVE FE-60, AL-26 AND PU-244 ON EARTH

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The Interstellar Medium (ISM) is continuously fed with new nucleosynthetic products. Presence of radionuclides live in the ISM is evidenced by space-born g-ray telescopes. The solar system moves through the ISM and collects dust particles. Therefore, direct detection of freshly produced radionuclides 'live' on Earth, i.e. before decaying, would provide insight into recent and nearby nucleosynthetic activities. A pioneering work at TU Munich of an ocean crust-sample showed an enhanced ^{60}Fe signal of extraterrestrial origin – does it originate from a close-by supernova about 2-3 Myr ago?

Within an international collaboration we continued to search for ISM radionuclides incorporated into terrestrial archives via ultra-low single atom measurements using accelerator mass spectrometry (AMS). Here, we report on new experimental results of radionuclide concentrations in the interstellar medium.

We have analyzed several deep-sea sediments, crusts and nodules for extraterrestrial ^{60}Fe ($t_{1/2}$=2.6 Myr), ^{26}Al ($t_{1/2}$=0.7 Myr) and ^{244}Pu ($t_{1/2}$=81 Myr) complemented by independent work at TU Munich. I will present a new approach to determine ^{60}Fe's half-life value. Our new data using AMS suggest an unexpected low abundance of interstellar ^{244}Pu. I will also present new results on ^{60}Fe and ^{26}Al and will relate them to potential exposure of Earth to recent supernova explosions.