



PHYSICS AND ASTRONOMY

COLLOQUIUM

(Online)

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**“Nearby supernovae and the r-process – interstellar
Fe-60 and Pu-244 in deep-sea archives”**

Abstract

“The Interstellar Medium (ISM) is continuously fed with new nucleosynthetic products. The solar system moves through the ISM and collects interstellar dust particles that contain such signatures including the radionuclides ^{60}Fe ($t_{1/2}=2.6$ Myr) and ^{244}Pu (81 Myr); both can be measured with Accelerator Mass Spectrometry (AMS) with high sensitivity. Since 20 years searches in deep-sea archives for minute traces of such radionuclides have been conducted.

AMS measurements demonstrate now clearly a global ^{60}Fe influx and is evidence for exposure of Earth to recent (<10 Myr) supernova explosions.

Recent detection of ISM- ^{244}Pu in deep-sea archives complements the positive detection of interstellar and supernova-produced ^{60}Fe . In contrast to ^{60}Fe , ^{244}Pu is exclusively produced by the r process. Presence of the radioactive ^{244}Pu in the ISM can thus place strong constraints on r-process frequency and production yields over the last few 100 Myr. The new data link supernovae and r process signatures in the ISM for the last 11 Myr.”

Wednesday, October 13, 2021

3:30 p.m.

via Zoom: <https://uvic.zoom.us/j/81377096640>