

INSTITUT FÜR ISOTOPENFORSCHUNG UND KERNPHYSIK  
DER UNIVERSITÄT WIEN

E I N L A D U N G

zum

I N S T I T U T S S E M I N A R

von

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**Supernova-produced radioactivity on Earth**

Several astronomical observations are indicating one or even more supernova explosions in the solar vicinity ( $< 100$  pc,  $1\text{ pc} = 3.26$  light years) during the past few million years. A direct signal for such an event is the detection of radionuclides - produced and ejected by this supernova - on Earth. For this purpose we have measured a time profile of  $^{60}\text{Fe}$  ( $T_{1/2} = 1.5$  Myr) in a ferromanganese crust originating from the Central Pacific.

The measurements were performed at the Munich MP Tandem by means of accelerator mass spectrometry.  $^{60}\text{Fe}$  ions were accelerated to 170 MeV and separated from its interfering stable isobar  $^{60}\text{Ni}$  by means of a gas-filled magnet. For the crust's layers with an age around three million years, amounts of  $^{60}\text{Fe}$  were detected which cannot be explained by any process inside the solar system, but are in very good agreement with the signal expected from a supernova with a distance of a few 10 pc.

Besides  $^{60}\text{Fe}$ , other long-lived radionuclides of possible supernova origin ( $^{26}\text{Al}$ ,  $^{53}\text{Mn}$ ,  $^{244}\text{Pu}$ ) are being measured in these samples, too. Additionally, the enhancement of the cosmic ray flux due to the expanding supernova remnant has been estimated, which might be reflected in the record of cosmogenic nuclides like  $^{10}\text{Be}$ .

**Donnerstag, 22. April 2004, 16:30 Uhr**

**1090 Wien, Währingerstr. 17, "Kavalierstrakt",  
1. Stock, Seminarraum von VERA**

P. Hille

W. Kutschera