Abstract Submitted
for the DNP15 Meeting of
The American Physical Society

Toward a Measurement of the Half-Life of 60Fe for Stellar and Early Solar System Models KAREN OSTDIEK, TYER ANDERSON, WILLIAM BAUDER, MATTHEW BOWERS, PHILIPPE COLLON, WENTING LU, DANIEL ROBERTSON, MICHAEL SKUSKI, University of Notre Dame, SAM AUSTIN, Michigan State University, JOHN GREENE, Argonne National Laboratory, WALTER KUTSCHERA, Vienna Environmental Research Laboratory, MICHAEL PAUL, Hebrew University of Jerusalem, ANTHONY WALLNER, The Australian National University — Radioisotopes, produced in stars and ejected through core collapse supernovae, are important for constraining stellar and early Solar System models. The presence of these isotopes, specifically ^{60}Fe, can identify progenitors of SN types, give evidence for nearby SNe, and can be a chronometer for ESS events. The ^{60}Fe half-life, which has been in dispute in recent years, can have an impact on calculations for the timing for ESS events, the distance to nearby SN, and the brightness of individual, non-steady state ^{60}Fe γ ray sources in the Galaxy. To measure such a long half life, one needs to simultaneously determine the number of atoms in and the activity of an ^{60}Fe sample. We have undertaken a half-life measurement at Notre Dame and have successfully measured the activity of our ^{60}Fe sample using the isomeric decay in ^{60}Co rather than the traditional ^{60}Co grow-in decay. This will then be coupled with the results of the ^{60}Fe concentration measurement of our sample using Accelerator Mass Spectrometry (AMS). I will present the most recent results of both measurements.

Karen Ostdiek
University of Notre Dame

Date submitted: 30 Jun 2015 Electronic form version 1.4