

Abstract Submitted
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Source self-absorption in PAC experiments¹ BRYANT WARD, AN-NESH MUKHOPADHYAY, GARY S COLLINS, Physics and Astronomy, Washington State University — PAC experiments were carried out previously to measure the ratio of site-fractions of In solute atoms on Gd- and Al-sublattice in the intermetallic compound GdAl₂ [1]. PAC is a spectroscopy measuring the time and angular correlation of two gamma-rays emitted successively in a nuclear decay. Spectra measured at relative angles of 180- and 90-degrees are then algebraically combined to determine a perturbation function that contains signals for solutes on both of the sublattices. However, for source samples having masses of 100 mg or greater, there is methodological disturbance to the perturbation function that mimics a signal for solutes on the Gd-sublattice. This is because coincidence counts measured at counter angles of 180-degrees are preferentially absorbed relative to 90-degrees. In order to obtain accurate values of site-fraction ratios, calculations are in progress to correct for this disturbance and will be reported at the meeting. [1] Matthew O. Zacate and Gary S. Collins, Phys. Rev. B69, 174202 (2004).

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