



Neutron Physics Group

**University of Massachusetts Lowell
October, 2003**

Published Papers

- ✱ "Neutron Inelastic Cross Sections From ^{159}Tb (n,n' γ)", Pil-Neyo Seo, James J. Egan, Gunter H.R. Kegel, David DeSimone, Young J. Ko, Don-Soo Kim, and Chuncheng Ji, Journal of Nuclear Science and Technology, Supplement 2, p.397, August 2002. Supported in part by DOE.
- ✱ "Measurement of Difference in Decay Rate for ^7Be in Li and ^7Be in Ta", David J. Souza, Gunter H. R. Kegel, James J. Egan, David DeSimone, and Pil-Neyo Seo, ibidem, p. 470. Supported in part by DOE.

Published Papers

- ✱ "The Statistical Distribution of the Number of Prompt Fission Gamma Rays", Chuncheng Ji, Gunter H.R. Kegel, James J. Egan, David DeSimone, Afrim Alimeti, Carlos Roldan, and Xudong Chen, *ibidem*, p. 815. Supported in part by DOE.
- ✱ "Total Neutron Cross Section Measurements of ^{27}Al , ^{159}Tb , and ^{169}Tm in the Region from 200 to 400 keV", P.-N. Seo, Y. J. Ko, G. H. R. Kegel, J. J. Egan, and D. J. DeSimone, submitted to *Nuclear Science and Engineering*. Supported in part by DOE.



Papers presented (ANS)

The Sixth International Meeting on Nuclear
Applications of Accelerator Technology
San Diego, CA, June 2003.



Papers presented (ANS)

- ✱ "Number of Prompt Gamma Rays emitted in U-235 Fission", Chuncheng Ji, Gunter H. R. Kegel, James J. Egan, David J. DeSimone, Book of Abstracts, p.18. Supported in part by DOE.
- ✱ "Calibration and Use of a U-235 Fission Chamber for Dosimetry", Carlos F. Roldan, Gunter H. R. Kegel, David J. DeSimone, James J. Egan, Don-Soo Kim, Steven E. Tremblay, ibidem, p. 44. Supported in part by DOE.

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Papers presented (ANS)

- ✱ "Use of a Boron Loaded Scintillator for Dosimetry in BNCT", Don-Soo Kim, James J. Egan, David J. DeSimone, Carlos F. Roldan, and Gunter H. R. Kegel, *ibidem*, p. 51. Supported by CFCI of the University of Massachusetts Lowell.



Completed Work

- ✱ "Gamma Ray Dose from a Quartz Viewer Irradiated with a 4-MeV Proton Beam". Supported by the Department of Physics and Applied Physics, University of Massachusetts Lowell.

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Work in Progress

- ✧ "Design of a Human Head Phantom for BNCT Studies". Supported by CFCI of the University of Massachusetts Lowell.
- ✧ "Measurement of the Angular Distribution of Neutrons from a Thick Lithium Target Irradiated with 4-MeV Protons and Comparison of the Results with Computer Code MURI". Supported in part by DOE.



Work in Progress

- ✱ "Gamma Multiplicity Studies for Neutron-Irradiated U-235". When ^{235}U is irradiated with MeV neutrons fission (eight gammas per fission, on the average) or scattering (zero to two gammas per event) occurs.
- We attempt to verify if a measurement of the gamma multiplicity can be used to separate fission from scattering events without biasing the results. Supported in part by DOE.



New Proposed Work

- ✱ Measurement of the gamma (and possibly neutron) time distribution following fission of ^{235}U , in the time interval from 1 ns to 200 ns.
- ✱ Determination of gamma emission and neutron scattering data for elemental erbium (a known reactor poison) in the 0.2 to 1.0 MeV neutron energy range.
- ✱ Measurement of neutron elastic and inelastic scattering cross sections of ^{169}Tm in the 0.2 MeV to 2.0 MeV neutron energy range.