Alexander M. Long

Post Doctoral Researcher
P-27 LANSCE Weapons Physics
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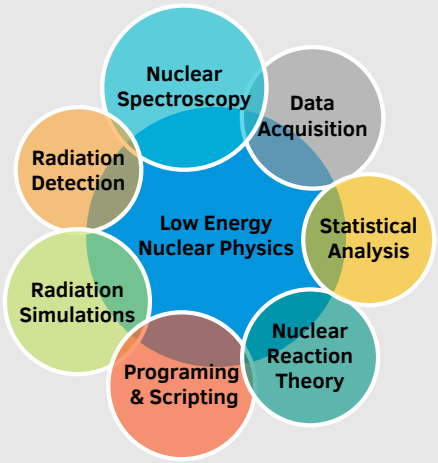
Skills

General Overview



Programming

Novice ⟶ *Expert*

C • C++ • Python • ROOT

Bash|shell • LaTeX

HTML • CSS • Qt • MIDAS

Modeling

TALYS • DWUCK4 • Geant4

XNet • VH1 • AutoCAD

Awards

National Honorary Fraternity of the Society for Physics Students *2007*
Guenter Schwarz Memorial Scholar Award *2008*
Notre Dame Graduate School Professional Development Award *2014*
Nuclear Science Laboratory's Cornelius P. Browne Memorial Award *2016*

Education

2009 - 2016 **Ph.D., Physics** (GPA: 3.7/4.0) — University of Notre Dame

2004 - 2009 **B.S., Physics with Honors** (GPA: 3.4/4.0) — Florida State University

Research Experience (selected)

Aug 2016 - Present — **Weapons Neutron Research Facility** — LANSCE @ Los Alamos

Investigating Neutron-Induced Charged-Particle Emission Cross-Sections using Low Energy (N,Z) (LENZ) at WNR/LANSCE.

- Developing digital Data Acquisition systems and analyzers for the LENZ experimental program.
- Preforming measurements of gas production reactions, (n,p) and (n,α), on structural materials for next generation nuclear reactors and fusion devices. Specific measurements performed to date: ^{56}Fe(n,α)^{53}Cr, ^{55}Mn(n,p)^{55}Cr, and ^{35}Cl(n,p)^{35}S.

Aug 2009 - Jul 2016 — **Nuclear Structure Laboratory** — NSL/ISNAP @ ND

General research assistant collaborating in many research projects throughout the Nuclear Structure Laboratory.

- Performed neutron background measurements using moderated ^{3}He proportional counters at various underground sites for the underground accelerator project, CASPAR.
- Worked on the reconstruction of the supersonic helium jet gas target system, HIPPO, at the NSL for future (α,γ) measurements with the St. George recoil separator.
- Participated in three commissioning experiments for the 4π summing NaI(Tl) detector (SuN) currently stationed at the NSCL.

Aug 2010 - Jul 2015 — **Research Center for Nuclear Physics** — RCNP @ University of Osaka

Visiting Researcher: Performed several nuclear spectroscopy experiments using the Grand Raiden Magnetic Spectrograph.

- Performed indirect measurements of the ^{45}V(p,γ)^{46}Cr reaction rate by probing posible resonance states in ^{46}Cr through ^{50}Cr(α,^{8}He)^{46}Cr reaction measurements. The ^{45}V(p,γ)^{46}Cr reaction is believed to influence ^{44}Ti synthesis in core collapse super novae.
- Investigated a possible neutron sources for the s-process by performing indirect measurement of the ^{22}Ne(α,γ) and ^{22}Ne(α,n) reaction rates. Sub- and near neutron-threshold levels in ^{26}Mg were precisely measured using the ^{22}Ne(α,α'), ^{22}Ne(^{6}Li,d), and ^{25}Mg($\vec{d}$,p) reactions.

Aug 2012 - Jul 2016 — **iThemba Laboratory for Accelerator Based Science** — iThemba LABS

Visiting Researcher: Performed several nuclear spectroscopy experiments using the K600 Magnetic Spectrograph.

- Investigated important (α,p) reaction rates along the αp-process path in Type 1 X-ray Bursts by probing α-capture resonance states in ^{18}Ne, ^{30}S, and ^{38}Ca through the (p,t) reactions measurements.
- Indirectly measured the ^{44}Ti(α,p)^{47}V reaction rate by probing α-capture resonance states in ^{48}Cr using ^{50}Cr(p,t)^{48}Cr reaction measurements. The strength of the ^{44}Ti(α,p)^{47}V reaction is through to heavily influence ^{44}Ti synthesis in core collapse super novae.

Publications (selected)

'An indirect study of the stellar ^{34}Ar(α,p)^{37}K reaction rate through ^{40}Ca(p,t)^{38}Ca reaction measurements' A.M. Long *et. al.*, *PRC* 95, 055803 (2017)

'α-unbound levels in ^{34}Ar from ^{36}Ar(p,t)^{34}Ar reaction measurements and implication for the astrophysical ^{30}S(α,p)^{33}Cl reaction rate'. A.M. Long *et. al.* *PRC* 97, 054613 (2018)