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EDUCATION

- Ph.D., Physics, University of Notre Dame May, 2004
Dissertation: *The Astrophysical Impact of $^{20}\text{Ne}(p,g)^{21}\text{Na}$*
(Advisor Dr. Michael Wiescher)
- M.S., Physics, University of Notre Dame January, 2001
- B.S., Physics, *magna cum laude*, University of Notre Dame May, 1995

PROFESSIONAL EXPERIENCE

- Associate Professional Specialist 2009 – present
Physics Department, University of Notre Dame
- Assistant Professional Specialist 2003 – 2009
Physics Department, University of Notre Dame

PRINCIPAL AREAS OF RESEARCH

- Experimental nuclear astrophysics
- In-beam particle and gamma ray spectroscopy
- Accelerator applications

PEER REVIEWED PUBLICATIONS

1. Multiscale X-ray fluorescence mapping complemented by Raman spectroscopy for pigment analysis of a 15th century Breton manuscript, Manukyan, KV; Guerin, BJ; Stech, EJ; Aprahamian, A; Wiescher, M; Gura, DT; Schultz, ZD; Analytical Methods, Vol 8, Issue 42, Pages 7696-7701. (2016)
2. First Direct Measurement of $^{12}\text{C}(^{12}\text{C},n)^{23}\text{Mg}$ at Stellar Energies, B.Bucher, X.D.Tang, X.Fang, A.Heger, S.Almaraz-Calderon, A.Alongi, A.D.Ayangeakaa, M.Beard, A.Best, J.Browne, C.Cahillane, M.Couder, R.J.deBoer, A.Kontos, L.Lamm, Y.J.Li, A.Long, W.Lu, S.Lyons, M.Notani, D.Patel, N.Paul, M.Pignatari, A.Roberts, D.Robertson,

- K.Smith, **E.Stech**, R.Talwar, W.P.Tan, M.Wiescher, S.E.Woosley, Phys. Rev. Lett. 114, 251102 (2015)
3. Proton capture cross section of ^{72}Ge and astrophysical implications, F.Naqvi, S.J.Quinn, A.Spyrou, A.Battaglia, M.Couder, P.A.DeYoung, A.C.Dombos, X.Fang, J.Gorres, A.Kontos, Q.Li, S.Lyons, D.Robertson, A.Simon, K.Smith, M.K.Smith, **E.Stech**, W.P.Tan, M.Wiescher, Phys. Rev. C 92, 045805 (2015)
 4. (α,γ) cross section measurements in the region of light p nuclei, S.J.Quinn, A.Spyrou, A.Simon, A.Battaglia, M.Bowers, B.Bucher, C.Casarella, M.Couder, P.A.DeYoung, A.C.Dombos, J.Gorres, A.Kontos, Q.Li, A.Long, M.Moran, N.Paul, J.Pereira, D.Robertson, K.Smith, M.K.Smith, **E.Stech**, R.Talwar, W.P.Tan, M.Wiescher, Phys. Rev. C 92, 045805 (2015)
 5. Experimental cross sections of $^{165}\text{Ho}(\alpha,n)^{168}\text{Tm}$ and $^{166}\text{Er}(\alpha,n)^{169}\text{Yb}$ for optical potential studies relevant for the astrophysical γ process, J.Glorius, K.Sonnabend, J.Gorres, D.Robertson, M.Knorzer, A.Kontos, T.Rauscher, R.Reifarth, A.Sauerwein, **E.Stech**, W.Tan, T.Thomas, M.Wiescher, Phys. Rev. C 89, 065808 (2014)
 6. Systematic study of (p, gamma) reactions on Ni isotopes, Simon,A., Spyrou,A., Rauscher,T., Froehlich,C., Quinn,S. J., Battaglia,A., Best,A., Bucher,B., Couder,M., DeYoung,P. A., Fang,X., Goerres,J., Kontos,A., Li,Q., Lin,L. -Y, Long,A., Lyons,S., Roberts,A., Robertson,D., Smith,K., Smith,M. K., Stech,E., Stefanek,B., Tan,W. P., Tang,X. D., Wiescher,M., Physical Review C, 87, 55802-55802, (2013).
 7. SuN: Summing NaI(Tl) gamma-ray detector for capture reaction measurements, Simon,A., Quinn,S. J., Spyrou,A., Battaglia,A., Beskin,I., Best,A., Bucher,B., Couder,M., DeYoung,P. A., Fang,X., Goerres,J., Kontos,A., Li,Q., Liddick,S. N., Long,A., Lyons,S., Padmanabhan,K., Peace,J., Roberts,A., Robertson,D., Smith,K., Smith,M. K., Stech,E., Stefanek,B., Tan,W. P., Tang,X. D., Wiescher,M., Nuclear Instruments & Methods in Physics Research Section A-Accelerators Spectrometers Detectors and Associated Equipment, 703, 16-21, (2013).
 8. A He-3 neutron detector for the measurement of (alpha,n) reactions, Falahat,Sascha, Best,Andreas, Couder,Manoel, Goerres,Joachim, Kratz,Karl-Ludwig, Ott,Uli, Stech,Ed, Wiescher,Michael, Nuclear Instruments & Methods in Physics Research Section A-Accelerators Spectrometers Detectors and Associated Equipment, 700, 53-58, (2013).
 9. Proton capture on O-17 and its astrophysical implications, Kontos,A., Goerres,J., Best,A., Couder,M., deBoer,R., Imbriani,G., Li,Q., Robertson,D., Schuermann,D., Stech,E., Uberseder,E., Wiescher,M., Physical Review C, 86, 55801-55801, (2012).
 10. Measurement of gamma rays from N-15(p,gamma)O-16 cascade and N-15(p,alpha(1)gamma)C-12 reactions, Imbriani,G., deBoer,R. J., Best,A., Couder,M., Gervino,G., Goerres,J., LeBlanc,P. J., Leiste,H., Lemut,A., Stech,E., Strieder,F., Uberseder,E., Wiescher,M., Physical Review C, 85, 65810-65810, (2012).

11. Measurement of elastic C-12 + alpha scattering: Above the proton separation energy, deBoer,R. J., Couture,A., Detwiler,R., Goerres,J., Tischhauser,P., Uberseder,E., Ugalde,C., Stech,E., Wiescher,M., Azuma,R. E., Physical Review C, 85, 45804-45804, (2012).
12. HIPPO: A supersonic helium jet gas target for nuclear astrophysics, Kontos,Antonios, Schuermann,Daniel, Akers,Charles, Couder,Manoel, Goerres,Joachim, Robertson,Daniel, Stech,Ed, Talwar,Rashi, Wiescher,Michael, Nuclear Instruments & Methods in Physics Research Section A-Accelerators Spectrometers Detectors and Associated Equipment, 664, 272-281, (2012).
13. Constraining the S factor of N-15(p,gamma)O-16 at astrophysical energies, LeBlanc,P. J., Imbriani,G., Goerres,J., Junker,M., Azuma,R., Beard,M., Bemmerer,D., Best,A., Brogгинi,C., Caciolli,A., Corvisiero,P., Costantini,H., Couder,M., deBoer,R., Elekes,Z., Falahat,S., Formicola,A., Fueloep,Zs, Gervino,G., Guglielmetti,A., Gustavino,C., Gyuerky,Gy, Kaeppler,F., Kontos,A., Kuntz,R., Leiste,H., Lemut,A., Li,Q., Limata,B., Marta,M., Mazzocchi,C., Menegazzo,R., O'Brien,S., Palumbo,A., Prati,P., Roca,V., Rolfs,C., Alvarez,C. Rossi, Somorjai,E., Stech,E., Straniero,O., Strieder,F., Tan,W., Terrasi,F., Trautvetter,H. P., Uberseder,E., Wiescher,M., Physical Review C, 82, 55804-55804, (2010).
14. O-16(alpha,gamma)Ne-20 S factor: Measurements and R-matrix analysis, Costantini,H., deBoer,R. J., Azuma,R. E., Couder,M., Goerres,J., Hammer,J. W., LeBlanc,P. J., Lee,H. Y., O'Brien,S., Palumbo,A., Simpson,E. C., Stech,E., Tan,W., Uberseder,E., Wiescher,M., Physical Review C, 82, 35802-35802, (2010).
15. The neutron long counter NERO for studies of beta-delayed neutron emission in the r-process, Pereira,J., Hosmer,P., Lorusso,G., Santi,P., Couture,A., Daly,J., Del Santo,M., Elliot,T., Goerres,J., Herlitzius,C., Kratz,K. -L, Lamm,L. O., Lee,H. Y., Montes,F., Ouellette,M., Pellegrini,E., Reeder,P., Schatz,H., Schertz,F., Schnorrenberger,L., Smith,K., Stech,E., Strandberg,E., Ugalde,C., Wiescher,M., Woehr,A., Nuclear Instruments & Methods in Physics Research Section A-Accelerators Spectrometers Detectors and Associated Equipment, 618, 275-283, (2010).
16. Production and characterization of oxygen-reduced implanted Ne-21 targets, Lee,H. Y., Goerres,J., Becker,H. -W, Stech,E., Strandberg,E., Wiescher,A., Nuclear Instruments & Methods in Physics Research Section B-Beam Interactions with Materials and Atoms, 267, 3539-3544, (2009).
17. Measurement of the decay branching ratios of the alpha-unbound states in Ne-19 and the O-15(alpha,gamma) reaction rate, Tan,W. P., Goerres,J., Beard,M., Couder,M.,

- Couture,A., Falahat,S., Fisker,J. L., Lamm,L., LeBlanc,P. J., Lee,H. Y., O'Brien,S., Palumbo,A., Stech,E., Strandberg,E., Wiescher,M., Physical Review C, 79, 55805-55805, (2009).
18. Measurement of elastic C-12+alpha scattering: Details of the experiment, analysis, and discussion of phase shifts, Tischhauser,P., Couture,A., Detwiler,R., Goerres,J., Ugalde,C., Stech,E., Wiescher,M., Heil,M., Kaeppler,F., Azuma,R. E., Buchmann,L., Physical Review C, 79, 55803-55803, (2009).
19. Cross-section measurement of the F-18(alpha,p)Ne-21 reaction and possible implication for neutron production in explosive helium burning, Lee,H. Y., Couder,M., Couture,A., Falahat,S., Goerres,J., Lamm,L., LeBlanc,P. J., O'Brien,S., Palumbo,A., Stech,E., Strandberg,E., Tan,W., Ugalde,C., Wiescher,M., Physical Review C, 80, 25805-25805, (2009).
20. (24)Mg(alpha, gamma)(28)Si resonance parameters at low alpha-particle energies, Strandberg,E., Beard,M., Couder,M., Couture,A., Falahat,S., Gorres,J., LeBlanc,P. J., Lee,H. Y., O'Brien,S., Palumbo,A., Stech,E., Tan,W. P., Ugalde,C., Wiescher,M., Costantini,H., Scheller,K., Pignatari,M., Azuma,R., Buchmann,L., Physical Review C, 77, 55801-55801, (2008).
21. Thermonuclear rate for the (19)F(alpha, p)(22)Ne reaction at stellar temperatures, Ugalde,C., Azuma,R. E., Couture,A., Gorres,J., Lee,H. Y., Stech,E., Strandberg,E., Tan,W., Wiescher,M., Physical Review C, 77, 35801-35801, (2008).
22. Measurement of the (19)F(p, gamma)(20)Ne reaction and interference terms from E(c.m.)=200-760 keV, Couture,A., Beard,M., Couder,M., Gorres,J., Lamm,L., LeBlanc,P. J., Lee,H. Y., O'Brien,S., Palumbo,A., Stech,E., Strandberg,E., Tan,W., Uberseder,E., Ugalde,C., Wiescher,M., Azuma,R., Physical Review C, 77, 15802-15802, (2008).
23. Design of the recoil mass separator St. George, Couder,M., Berg,G. P. A., Gorres,J., LeBlanc,Pt, Lamm,L. O., Stech,E., Wiescher,M., Hinnefeld,J., Nuclear Instruments & Methods in Physics Research Section A-Accelerators Spectrometers Detectors and Associated Equipment, 587, 35-45, (2008).
24. Astrophysical S factor for alpha-capture on (112)Sn in the p-process energy range, Ozkan,N., Efe,G., Guray,R. T., Palumbo,A., Gorres,J., Lee,H. Y., Lamm,L. O., Rapp,W., Stech,E., Wiescher,M., Gyurky,Gy, Fulop,Zs, Somorjai,E., Physical Review C, 75, 25801-25801, (2007).

25. Lifetime of the astrophysically important 4.03-MeV state in Ne-19, Tan,WP, Gorres,J., Daly,J., Couder,M., Couture,A., Lee,HY, Stech,E., Strandberg,E., Ugalde,C., Wiescher,M., Physical Review C, 72, 41302-41302, (2005).
26. Elastic alpha-C-12 scattering and the C-12(alpha, gamma)O-16 E2 S factor, Tischhauser,P., Azuma,RE, Buchmann,L., Detwiler,R., Giesen,U., Gorres,J., Heil,M., Hinnefeld,J., Kappeler,F., Kolata,JJ, Schatz,H., Shotter,A., Stech,E., Vouzoukas,S., Wiescher,M., Physical Review Letters, 88, 72501-72501, (2002).
27. Low-energy resonances in N-14(alpha,gamma)F-18 and their astrophysical implications, Gorres,J., Arlandini,C., Giesen,U., Heil,M., Kappeler,F., Leiste,H., Stech,E., Wiescher,M., Physical Review C, 62, 55801-55801, (2000).
28. Half-life of Ti-44 as a probe for supernova models, Gorres,J., Meissner,J., Schatz,H., Stech,E., Tischhauser,P., Wiescher,M., Bazin,D., Harkewicz,R., Hellstrom,M., Sherrill,B., Steiner,M., Boyd,RN, Buchmann,L., Hartmann,DH, Hinnefeld,JD, Physical Review Letters, 80, 2554-2557, (1998).
29. First measurement of excited states in the very proton rich nucleus Si-24 and the consequences for Na-22 nucleosynthesis in novae, Schatz,H., Gorres,J., Herndl,H., Kaloskamis,NI, Stech,E., Tischhauser,P., Wiescher,M., Bacher,A., Berg,GPA, Black,TC, Choi,S., Foster,CC, Jiang,K., Stephenson,EJ, Physical Review Letters, 79, 3845-3848, (1997).

INVITED LECTURES AND TALKS

- “Recent Additions to the Nuclear Science Lab at Notre Dame”, International Conference on the Application of Accelerators in Research and Industry, Fort Worth, TX 2012
- “New Tools For Nuclear Astrophysics at Notre Dame”, International Conference on the Application of Accelerators in Research and Industry , Fort Worth, TX 2010
- Research Experience for Undergraduates Seminar, “Accelerator Applications”, 2008
Department of Physics, University of Notre Dame

TEACHING/OUTREACH

- Primary Faculty, PIXE-PAN Summer Science Program 2006 - 2011
In addition to designing and directing the program and lab work, delivered short course to high school teacher and student participants of this highly successful two-week summer science program for High School teachers and students.

Instructor for Directed Research

Fall Semester 2011

Directed a senior Notre Dame Anthropology student who prepared a honor's thesis based upon PIXE measurements on ceramic sherds performed in the Nuclear Science Laboratory

UNIVERSITY AND COLLEGE OF SCIENCE PROFESSIONAL SERVICE

- Member of University Laboratory Safety Advisory Committee (August 2013 – Present)
- Member of Ad Hoc Research Lab Safety Committee (June 2012-August 2013)
- Member of University Radiation Control Committee (September 2008 – Present)