Manoël Couder

The University of Notre Dame
Department of Physics
Nuclear Structure Laboratory
108A Nieuwland Science Hall
Notre Dame, IN 46556

Office: (574) 631-6238
(574) 631-7716
Fax: (574) 631-5952
Email: mcouder (at) nd (dot) edu

Personal Data

Date of Birth	November 13, 1975
Citizenship	Belgian
Birth Place	Brussels, Belgium

Education

Ph.D. Physics	Université Catholique de Louvain, 2004
Thesis	*Commissioning of the recoil separator ARES and its application to nuclear astrophysics*
Advisor	Prof. Pierre Leleux
M.Sc. Physics	Université Catholique de Louvain, 1999
B.Sc. Physics	Université Catholique de Louvain, 1998

Positions

Research Assistant Professor, University of Notre Dame, 01/2009 – present
Research Associate, University of Notre Dame, Nuclear Structure Laboratory, 10/2004–12/2008.
Research Assistant, Université Catholique de Louvain – Belgium, Institut de Physique Nucléaire, 09/2002-09/2004.
Scientific Research Worker, F.N.R.S. at the nuclear physics institute at the Université Catholique de Louvain, 09/1998-08/2002

Professional Memberships

American Physical Society
European Physical Society
Belgium Physical Society

Languages

French, English, Dutch

IT/Computing

Operating System	Linux, Unix, Windows
Languages	C/C++(STL), FORTRAN77: algorithmic, GUI (Qt library), real-time data acquisition, data analysis (ROOT). HTML, php, perl, bash

Refereed Publications

1. "Measurement of the decay branching ratios of the α-unbound states in ^{19}Ne and the ^{15}O(α,γ) reaction rate," W.P. Tan, J. Görres, M. Beard, M. Couder, A. Couture, S. Falahat, J.L. Fisker, L. Lamm, P.J. LeBlanc, H.Y. Lee, S. O'Brien, A. Palumbo, E. Stech, E. Strandberg, and M. Wiescher, Phys. Rev. C 79, 055805 (2009).

2. "Cross-section measurement of the ^{18}Fe(α,p)^{21}Ne reaction and possible implication for neutron production in explosive helium burning," H.Y. Lee, M. Couder, A. Couture, S. Falahat, J. Görres, L. Lamm, P.J. LeBlanc, S. O'Brien, A. Palumbo, E. Stech, E. Strandberg, W. Tan, C. Ugalde, and M. Wiescher, Phys. Rev. C 80, 025805 (2009).

3. "Design of the recoil mass separator St. George," M. Couder, G.P.A. Berg, J. Görres, P.J. LeBlanc, L.O. Lamm, E. Stech, M. Wiescher and J. Hinnefeld, Nucl. Instr. Meth. A 587, 35 (2008).

4. "^{24}Mg(alpha, gamma)^{28}Si resonance parameters at low alpha-particle energies," E. Strandberg, M. Beard, **M. Couder**, A. Couture, S. Falahat, J. Görres, P.J. LeBlanc, H.Y. Lee, S. O'Brien, A. Palumbo, E. Stech, W.P. Tan, C. Ugalde, M. Wiescher, H. Costantini, K. Scheller, M. Pignatari, R. Azuma, L. Buchmann, Physical Review C 77, 055801 (2008).

5. "Measurement of the ^{19}F(p, gamma)^{20}Ne reaction and interference terms from E-c.m.=200-760 keV," A. Couture, M. Beard, **M. Couder**, J. Görres, L.O. Lamm, P.J. LeBlanc, H.Y. Lee, S. O'Brien, A. Palumbo, E. Stech, E. Strandberg, W.P. Tan, E. Uberseder, C. Ugalde, M. Wiescher, R. Azuma, Physical Review C 77, 015802 (2008).

6. "^{15}O(alpha, gamma)^{19}Ne Breakout Reaction and Impact on X-Ray Bursts," W.P. Tan, J.. Fisker, J. Görres, **M. Couder**, M. Wiescher, Physical Review Letter 98, 242503 (2007).

7. "Indirect study of ^{19}Ne states near the ^{18}F+p threshold," N. de Séréville, A. Coc, C. Angulo, M. Assunção, D. Beaumel, E. Berthomieux, B. Bouzid, S. Cherubini, **M. Couder**, P. Demaret, F. de Oliveira Santos, P. Figuera, S. Fortier, M. Gaelens, F. Hammache, J. Kiener, A. Lefebvre-Schuhl, D. Labar, P. Leleux, M. Loiselet, A. Ninane, S. Ouichaoui, G. Ryckewaert, N. Smirnova, V. Tatischeff, Nuclear Physics A 791, 251 (2007).

8. "Astrophysical nuclear reactions and the break-out from the hot CNO cycles," M. Wiescher, G.P.A. Berg, **M. Couder**, J.L. Fisker, Y. Fujita, J. Görres, K. Hatanaka, A. Matic, W.P. Tan, A.M. van den Berg, Progress in Particle and Nuclear Physics 59, 51 (2007).

9. "A first experimental approach to the ^{15}O+alpha elastic scattering," F. Vanderbist, P. Leleux, C. Angulo, E. Caserejos, **M. Couder**, M. Loiselet, G. Ryckewaert, P. Descouvemont, M. Aliotta, T. Davinson, Z. Liu, P. Woods, European Physical Journal A 27, 183 (2006).

10. "Lifetime of the astrophysically important 4.03-MeV state in ^{19}Ne," W.P. Tan, J. Görres, J. Daly, **M. Couder**, A. Couture, H.Y. Lee, E. Stech, E. Strandberg, C. Ugalde, M. Wiescher, Physical Review C 72, 041302 (2005).

11. "The ^{7}Be(d,p)2-alpha cross section at big bang energies and the primordial ^{7}Li abundance," C. Angulo, E. Caserejos, **M. Couder**, P. Demaret, P. Leleux, F. Vanderbist, A. Coc, J. Kiener, V. Tatischeff, T. Davinson, A.S. Murphy, N.L. Achouri, N.A. Orr, D. Cortina-Gil, P. Figuera, B.R. Fulton, I. Mukha, E. Vangioni, Astrophysical Journal 630, L105 (2005).

12. "New direct study of the ^{19}Ne(p, gamma)^{20}Na reaction cross section," **M. Couder**, C. Angulo, E. Caserejos, P. Demaret, P. Leleux, and F. Vanderbist, Physical Review C 69, 022801 (2004).

13. "Performance of the ARES recoil separator for (p, gamma) reaction measurements," **M. Couder**, C. Angulo, W. Talster, J.-S. Graulich, P. Leleux, P. Lipnik, G. Tabacaru and F. Vanderbist, Nuclear Instruments & Methods A506, 26 (2003).

14. "^{2}He(^{18}F,p)^{15}N reaction applied to nova gamma-ray emission," N. de Séréville, A. Coc, C. Angulo, M. Assunção, D. Beaumel, B. Bouzid, S. Cherubini, **M. Couder**, P. Demaret, F. de Oliveira Santos, P. Figuera, S. Fortier, M. Gaelens, F. Hammache, J. Kiener, A. Lefebvre, D. Labar, P. Leleux, M. Loiselet, A. Ninane, S. Ouichaoui, G. Ryckewaert, N. Smirnova, V. Tatischeff, and J.-P. Thibaud, Physical Review C 67, 052801 (2003).

15. "Experimental determination of the ^{7}Be+p scattering lengths," C. Angulo, M. Azzouz, P. Descouvemont, G. Tabacaru, D. Baye, M. Cogneau, **M. Couder**, T. Davinson, A. Di Pietro, P. Figuera, M. Gaelens, P. Leleux, M. Loiselet, A. Ninane, F. de Oliveira Santos, R.G. Pizzone, G. Ryckewaert, N. de Sereville, F. Vanderbist, Nuclear Physics A 716, 211 (2003).

16. "Identification of a new low-lying state in the proton drip line nucleus ^{19}Na," C. Angulo, G. Tabacaru, **M. Couder**, M. Gaelens, P. Leleux, A. Ninane, F. Vanderbist, T. Davinson, P.J. Woods, J.S. Schweitzer, N.L. Achouri, J.C. Angelique, E. Berthoumeiux, F. de Oliveira Santos, P. Himpe, P. Descouvemont, Physical Review C 67, 014308 (2003).

17. "Analysis of ^{4}He implanted in Al foils using the ^{4}He(p,p)^{4}He backscattering interaction," Y. El Masri, N. Moroso, V. Zaconte, Ch. Heitz, J. Cabrera, Ch. Dufauquez, V. Roberfroid, J. Van Mol, J. Lehmann, F. Vanderbist, P. Leleux, **M. Couder**, Nuclear Instruments & Methods B 197, 271 (2002).

18. "Realization and analysis of He-implanted foils for the measurement of (α,gamma) reaction cross-sections in nuclear astrophysics," F. Vanderbist, C. Angulo, **M. Couder**, Y. El Masri, P. Leleux, M. Loiselet and G. Tabacaru, Nuclear Instruments & Methods B 197, 165 (2002).

Unrefereed Publications

1. "Study of the ^{19}Ne(p,gamma)^{20}Na reaction and subsequent improvements to ARES," **M. Couder**, C. Angulo, E. Casarejos, P. Demaret, P. Leleux, F. Vanderbist, Nuclear Physica A 758, 741C (2005).

2. "Study of ^{7}Be+d reactions for standard big bang nucleosynthesis," C. Angulo, E. Casarejos. A. Coc, T. Davinson, N. Achouri, D. Cortina-Gil, **M. Couder**, P. Figuera, B. Fulton, J. Kiener, P. Leleux, I. Mukha, A.S. Murphy, A. Ninane, N. Orr, V. Tatischeff, F. Vanderbist, Nuclear Physics A 758, 775C (2005).

3. "Spectroscopy of the proton drip line nucleus ^{19}Na by ^{1}H(^{18}Ne,p)^{18}Ne elastic scattering," C. Angulo, P. Descouvemont, **M. Couder**, M. Gaelens, P. Leleux, A. Ninane, G. Tabacaru, F. Vanderbist, T. Davinson, P.J. Woods, J.S. Schweitzer, N.L. Achouri, J.C. Angelique, E. Berthoumeiux, F.D. Santos, P. Himpe, Nuclear Physics A 719, 201C (2003).

4. "The elastic scattering ^{7}B + p at low energies: implications on the ^{7}Be(p, gamma)^{8}Be S-factor," C. Angulo, P. Descouvemont, M. Cogneau, **M. Couder**, M. Gaelens, P. Leleux, M. Loiselet, G. Ryckewaert, G. Tabacaru, F. Vanderbist, T. Davinson, M. Azzouz, D. Baye, A. Di Pietro, P. Figuera, R.G. Pizzone, F.D. Santos, N. de Sereville, Nuclear Physics A 719, 300C (2003).

5. "Study of the ^{18}F(p, alpha)^{15}O reaction for application to nova gamma-ray emission," N. de Sereville, A. Coc, C. Angulo, M. Assunção, D. Beaumel, B. Bouzid, S. Cherubini, **M. Couder**, P. Demaret, F.D. Santos, P. Figuera, S. Fortier, M. Gaelens, F. Hammache, J. Kiener, D. Labar, A. Lefebvre, P. Leleux, M. Loiselet, A. Ninane, S. Ouichaoui, G. Ryckewaert, N. Smirnova, V. Tatischeff, J.P. Thibaud, Nuclear Physics A 781, 259C (2003).

6. "New developments and recent results in nuclear astrophysics at Louvain-la-Neuve," S. Cherubini, C. Angelo, **M. Couder**, W. Galster, J.S. Graulich, P. Leleux, P. Lipnik, M. Loiselet, A. Musumarra, A. Ninane, G. Ryckewaert, J. Vervier, M. Aliotta, P. Figuera, M. Lattuada, M.G. Pellegriti, C. Spitaleri, T. Davinson, A. Di Pietro, A.M. Laird, A.N. Ostrowski, A.C. Shotter, P.J. Woods, J. Hinnefeld, S. Typel, H. Wolter, Nuclear Physics A 701, 632C (2002).

7. "First results with the recoil separator ARES," C. Angulo, **M. Couder**, S. Cherubini, W. Galster, J.S. Graulich, P. Leleux, F. Vanderbist, A.C. Shotter, Nuclear Physics A 688, 462C (2001).

Talks, Seminars and Other Presentations

1. "St. George, a first step toward a recoil separator for FRIB," 2007 Division of Nuclear Physics Annual meeting – Mini-Symposium on Radioactive Beams and Observations in Nuclear Astrophysics, Newport News, VA, USA, October 2007.

2. "Design of the Notre Dame recoil separator," EMIS2007, Deauville, France, June 2007.

3. "Radiative capture ^{4}He of astrophysical interest at Notre Dame," TRIUMF, Vancouver, Canada, May 2007.

4. "Radiative capture ^{4}He of astrophysical interest at Notre Dame," Invited Seminar, University of Louvain, Louvain-La-Neuve, Belgium, April 2007.

5. "Recoil separators for the measurement of capture reactions of astrophysics interest," Second CARINA Workshop, Frontiers in European Nuclear Astrophysics, Spa, Belgium, April 2007.

6. "Radiative capture ^{4}He of astrophysical interest at Notre Dame," Invited Seminar, LBNL Berkeley, California, USA, March 2007.

7. "The Notre Dame recoil separator," 2006 Division of Nuclear Physics Annual Meeting – Mini-symposium on Experimental Techniques to Low Energy Nuclear Astrophysics Studies, Nashville, Tennessee, USA, October 2006.

8. "A recoil separator for ALNA," Henderson DUSEL Capstone Workshop, Stony Brook University, USA, May 2006.

9. "Characterization of the recoil separator ARES and application to the study of ^{19}Ne(p,g)^{20}Na," Invited Seminar, Notre Dame, USA, April 2004.

10. "Commissioning of the recoil separator ARES and application to the reaction ^{19}Ne(p,g)^{20}Na," Second European summer school on experimental nuclear astrophysics, Catania-Italy, October 2003.

11. "Performance of the ARES recoil separator for (p,g) reaction measurements," 19th Meeting between Astrophysicists and Nuclear Physicists, Brussels-Belgium, December 2002.

12. "Ares: un séparateur de recul pour l'astrophysique nucléaire," Ecole Joliot-Curie de Physique nucléaire, Spa-Belgium, September 2001.

13. "The recoil separator ARES: a status report," General scientific meeting of the Belgian physical society, Leuven-Belgium, May 2001.

14. "Ares: un séparateur de recul pour l'astrophysique nucléaire," Meeting of the Belgian nuclear physicist, Ittre-Belgium, February 2000.