

Research Scientist

Baptiste MOUGINOT

Visitor Scientist, University of Wisconsin-Madison
Department of Nuclear Engineering
434 Engineering Research Building
1500 Engineering Dr., Madison, WI 53706
+1 (608)-338-3481 / mouginot.baptiste@gmail.com
GitHub: [bam241](#)

Education

10/2007 - 12/2010	Ph.D in Sciences, University of Paris XI, France , " <i>Search for Giant Pairing Vibration & Life time measurement using PLUNGER method in ^{74}Zn</i> ".
2004 - 2007	MASTER DEGREE in Nuclei, Particles, Astro-Particles and Cosmology , University of Paris XI.

Professional experiences

10/2015 - present	Scientist, Departement of Nuclear Engineering, University of Wisconsin-Madison , " <i>Electro-nuclear systems and dynamic fuel cycle calculations</i> " : development in Cyclus fuel cycle tool, analyzed scenarios in support of Fuel Cycle Option campaign, fuel fabrication and cross section prediction models.
08/2012 - 07/2015	Scientist, Subatech, Nantes (FRANCE) , " <i>Electro-nuclear systems and dynamic fuel cycle calculations</i> " : development of CLASS, a dynamic fuel cycle simulations software, fuel fabrication and cross section prediction models, fuel cycle calculations.
08/2011 - 07/2012	Postdoctoral position, Subatech , " <i>Electro-nuclear systems and dynamic fuel cycle calculations</i> ".
10/2007 - 12/2010	Ph.D, Institut de Physique Nucléaire d'Orsay , " <i>Search for Giant Pairing Vibration & Life time measurement using PLUNGER method in ^{74}Zn : γ and mass spectroscopy</i> , data analysis, C/C++ development.

Teaching

2011/2014	Lecture in calculus of variations, Ecole des Mines de Nantes (EMN) , $3 \times 12\text{h}$. Projects supervision, EMN , $2 \times 20\text{h}$ & $3 \times 23\text{h}$.
2011/2013	Practical work of Analog electronics, EMN , $2 \times 18\text{h}$.
2013	Master 2 Internship supervision, EMN , 6 months.
2012	Master I Internship supervision, EMN , 7 weeks.

kills

Simulation	LISE++, SRIM, Geant4, MCNP/MCNPX, MURE, CLASS, Cyclus.
Software Development	Shell Script, python.
Version Control	svn, git.
Continuous Integration	GitHub/GitLab, CircleCI, Docker.
Languages	English (fluent), French (native speaker), German (scholar).

Main scientific contributions

2016	- "Impact of Isotope Fidelity on Fuel Cycle Calculations" B. Mouginot, P.P.H. Wilson, R.W. Carlsen , <i>Winter ANS 2016</i> , Las Vegas, U.S.A (11/2016) : oral presentation.
2015	- "A neural network approach for burn-up calculation and its application to the dynamic fuel cycle code CLASS", B. Leniau, B. Mouginot, T. Thiolière et al. , <i>Annals of Nuclear Energy</i> , 81, (2015). - "MOX fuel enrichment prediction in PWR using polynomial models", B. Mouginot, B. Leniau, T. Thiolière et al. , <i>Annals of Nuclear Energy</i> , 85 (2015).
2014	- "Core Library Advanced Scenario Simulation, Principle & Application." B. Mouginot, B. Leniau, N. Thiolière et al. , <i>PHYSOR 2014</i> , Kyoto, Japon (09/2014) : poster.
2013	- "CLASS : Core Library for Advanced Scenario Simulation." B. Mouginot, N. Thiolière , <i>TCADS 2</i> , Nantes, France : oral presentation. - "A high power ADS concept for the minor actinides transmutation." N. Thiolière, B. Mouginot, J.B. Clavel , <i>TCADS 2</i> , Nantes, France : oral presentation.
2012	- "GEDEPEON Bilan" B. Mouginot, N. Thiolière and J.B. Clavel , <i>GEDEPEON</i> , Paris, France (décembre 2012) : oral presentation. - "Lifetime measurement of 2+1 state in ^{74}Zn by differential plunger method", M. Niikura, B. Mouginot et al. , <i>Physical Review C</i> , 85, (2012).
2011	- "Search for the Giant Pairing Vibration through (p,t) reactions around 50 and 60 MeV", B. Mouginot, E. Khan, N. Retief et al. , <i>Physical Review C</i> , 83, (2011).
2010	- "Exploring life-time of low-lying states in neutron rich nuclei towards ^{78}Ni with the plunger technique at GANIL", B. Mouginot, M. Niikura et al. , <i>EURORIB'10</i> , Lamoura, France : oral presentation.
2008	- "Search of the Giant Pairing Vibration mode in nuclei", B. Mouginot, E. Khan, R. Neveling et al. , <i>LEA COLLIGA Meeting</i> , Catane, Italie : oral presentation. - "Giant Pairing Vibrations : experimental overview", B. Mouginot, E. Khan, R. Neveling et al. , <i>Probing pair correlations : experimental tools and associated models, Workshop</i> , Saclay, France : oral presentation.

Experimental contribution

06/2009 and 10/2009	Plunger experiment ^{74}Zn , GANIL, France : simulation, set-up, participation, online analysis and data analysis.
03/2009 and 03/2007	GPV experiment , iThemba LABS, South Africa : simulation, participation and data analysis.
09/2008	Beam purification test at LISE line , GANIL, France.
11/2007	TIARA-MUST2-VAMOS-EXOAM campaign , GANIL, France : participation to $^{20}\text{O}(d,t)$ experiment and data analysis of the $^{36}\text{S}(d,t)/(d,^3\text{He})$ test experiment.

Scientific communications

Peer review articles

- 2015 "Prediction of required MgO volumic fraction in ADS fuel dedicated to minor actinides transmutation", **N. Thiolière, F. Courtin, B. Leniau, B. Mouginot et al.**, *Progress in Nuclear Energy*, 85, (2015).
"MOX fuel enrichment prediction in PWR using polynomial models", **B. Mouginot, B. Leniau, T. Thiolière et al.**, *Annals of Nuclear Energy*, 85, (2015).
"A neural network approach for burn-up calculation and its application to the dynamic fuel cycle code CLASS", **B. Leniau, B. Mouginot, T. Thiolière et al.**, *Annals of Nuclear Energy*, 81, (2015).
- 2014 "Advanced plutonium management in PWR, complementarity of thorium and uranium", **M. Ernoult et al.**, *Progress in Nuclear Energy*, 78, (2014).
- 2013 "Structure of ^{80}Ge revealed by the β decay of isomeric states in ^{80}Ga : Triaxiality in the vicinity of ^{78}Ni ", **D. Verney, B. Tastet et al.**, *Physical Review C*, 87, (2013).
- 2012 "Lifetime measurement of $2+1$ state in ^{74}Zn by differential plunger method", **M. Niikura, B. Mouginot et al.**, *Physical Review C*, 85, (2012).
"First $g(2^+)$ measurement on neutron-rich ^{72}Zn , and the high-velocity transient field technique for radioactive heavy-ion beams", **E. Fiori et al.**, *Physical Review C*, 85, (2012).
"Low-lying neutron fp -shell intruder states in ^{27}Ne ", **S.M. Brown, W. N. Catford, J.S. Thomas et al.**, *Physical Review C*, 85, (2012).
"Structure of the $N=50$ As, Ge, Ga nuclei", **E. Sahin et al.**, *Nuclear Physics A*, 893, (2012).
- 2011 "Emergence of the $N = 16$ shell gap in ^{21}O ", **B. Fernandez-Dominguez, J.S. Thomas et al.**, *Physical Review C*, 84, (2011).
"Search for the giant pairing vibration through (p,t) reactions around 50 and 60 MeV", **B. Mouginot, E. Khan, N. Retief et al.**, *Physical Review C*, 83, (2011).
- 2009 "Experimental study of ^{84}Ga β decay : Evidence for a rapid onset of collectivity in the vicinity of ^{78}Ni ", **M. Lebois, D. Verney, F. Ibrahim, S. Essabaa et al.**, *Physical Review C*, 80, (2009).
"Study of the $^{20}\text{O}(d,t)$ Reaction with the TIARA-MUST2-VAMOS-EXOGAM Setup", **A. Ramus et al.**, *International Journal of Modern Physics E*, (2009).
"Structure of the Neutron Rich Ga and Ge Isotopes Observed at Alto", **D. Verney, M. Lebois, F. Ibrahim, S. Essabaa et al.**, *International Journal of Modern Physics E*, (2009).

Conference Proceedings

- 2017 "An Integrated Nuclear Archaeology Approach to Reconstructing Fissile Material Production Histories", **M. Göttische, B. Mouginot et al.**, *ESDRA 2017*, Düsseldorf, Germany (2017).
- 2015 "Mean Cross Section Prediction in PWR-MOX Using Neural Network " **B. Leniau, B. Mouginot, N. Thiolière et al.**, *GLOBAL 2015*, Paris, France (2015).
"ADS Fuel Loading Model for Minor Actinides Transmutation Scenarios " **N. Thiolière, F. Courtin, B. Mouginot, B. Leniau et al.**, *GLOBAL 2015*, Paris, France (2015).
- 2014 "Core Library Advanced Scenario Simulation, Principle & Application." **B. Mouginot, B. Leniau, N. Thiolière et al.**, *PHYSOR 2014*, Kyoto, Japon (2014).
- 2013 "CLASS : Core Library for Advanced Scenario Simulation." **B. Mouginot, N. Thiolière**, *TCADS 2*, Nantes, France (2013).
"A high power ADS concept for the minor actinides transmutation." **N. Thiolière, B. Mouginot, J.B. Clavel**, *TCADS 2*, Nantes, France (2013).
- 2010 "Lifetime measurement of 2_1^+ state in ^{74}Zn with differential Plunger technique", **M. Niikura, B. Mouginot et al.**, *XLV Zakopane Conference on Nuclear physics "Extremes of the Nuclear Landscape"*, Zakopane, Pologne (2010).
"Lifetime measurement of 2_1^+ state in ^{74}Zn with differential Plunger technique", **M. Niikura, B. Mouginot et al.**, *11th Symposium on Nuclei in the Cosmos*, Heidelberg, Allemagne (2010).

- "Spectroscopic study of ^{26}Si for application to nova gamma-ray emission", **N. de Séréville et al.**, *FINUSTAR3*, Rhodes, Grèce (2010).
- "Spectroscopic study of ^{26}Si for application to nova gamma-ray emission", **N. de Séréville et al.**, *NIC XI*, Heidelberg, Allemagne (2010).
- 2009 "Probing High-Velocity Transient-Field Strength Using Heavy-ions Traversing Fe and Gd", **E. Fiori, G. Georgiev, A. E. Stuchbery, A. Jungclaus, et al.**, *Nuclear Structure and Dynamics*, Dubrovnik, Croatia (2009).
- "Magnetic moment of the 2+ state in the neutron-rich radioactive ^{72}Zn using the High-Velocity Transient-Field technique", **E. Fiori, G. Georgiev, A. E. Stuchbery, A. Jungclaus, et al.**, *Nuclear Structure and Dynamics*, Dubrovnik, Croatia (2009).
- "Does transfer confirm knockout results for spectroscopic factor suppression with radioactive beams?", **J.S. Thomas et al.**, *Nuclear Structure and Dynamics*, Dubrovnik, Croatia (2009).
- 2008 "Structure of the neutron rich Ga and Ge isotopes observed at Alto", **M. Lebois, D. Verney, F. Ibrahim, S. Essabaa et al.**, *Japanese French Symposium - New paradigms in Nuclear Physics*, Paris, France (2008).
- "Study of the $^{20}\text{O}(\text{d},\text{t})$ reaction with the TIARA-MUST2-VAMOS-EXOGRAM setup", **A. Ramus et al.**, *Japanese French Symposium - New paradigms in Nuclear Physics*, Paris, France (2008).

Workshops/Conferences

- 2016 - "Impact of Isotope Fidelity on Fuel Cycle Calculations" **B. Mougnot, P.P.H. Wilson, R.W. Carlsen**, *Winter ANS 2016*, Las Vegas, U.S.A (11/2016) : oral presentation.
- "Transition Analysis with Cyclus" **B. Mougnot et al.**, *Dynamic Nuclear Fuel Cycle Workshop*, Paris, France (2016) : oral presentation.
- 2015 "CLASS Overview" **B. Mougnot**, *CLASS/CYCLUS Workshop*, Madison, Wisconsin, USA (2015) : oral presentation.
- "French Fleet Application" **B. Mougnot**, *CLASS/CYCLUS Workshop*, Madison, Wisconsin, USA (2015) : oral presentation.
- 2012 "CLASS, a New Tool for Nuclear Scenarios" **B. Mougnot, J.B. Clavel and N. Thiolière**, *International Conference on Nuclear Power Engineering*, Madrid, Spain (2012) : poster.
- 2010 "Exploring life-time of low-lying states in neutron rich nuclei towards ^{78}Ni with the plunger technique at GANIL", **B. Mougnot, M. Niikura et al.**, *EURORIB'10*, Lamoura, France (2010) : oral presentation.
- 2008 "Giant pairing vibrations : experimental overview", **B. Mougnot, E. Khan, R. Neveling et al.**, *Probing pair correlations Experimental tools and associated models, Workshop*, Saclay, France (2008) : oral presentation.
- "Search of the Giant Pairing Vibration mode in nuclei", **B. Mougnot, E. Khan, R. Neveling et al.**, *LEA COLLIGA Meeting*, Catane, Italy (2008) : oral presentation.

References

- **Faiçal Azaiez** : Scientific Adviser (2007/2010)
Senior researcher, CNRS
Institut de Physique Nucléaire d'Orsay (IPNO) - UMR 8608
Email : azaiez@ipno.in2p3.fr
- **Serge Franchoo** : Scientific Adviser (2007/2010)
Researcher, CNRS
Institut de Physique Nucléaire d'Orsay (IPNO) - UMR 8608
Email : franchoo@ipno.in2p3.fr
- **Nicolas Thiollière** : Scientific Adviser(2011/2015)
Researcher, Ecole des Mines de Nantes
Laboratoire SUBATECH - UMR 6457
Email : nicolas.thiolliere@subatech.in2p3.fr
- **Paul P.H. Wilson** : Scientific Adviser(2015/2017)
Professor, Department of Engineering Physics
Univeristy of Wisconsin-Madison
Email : wilsonp@engr.wisc.edu
- **Joachim Miss** : Close Collaborator (2012/2015)
Responsable de Mission Programmes et Stratégies Scientifiques, IRSN
IRSN Institut de Radioprotection et de Sûreté Nucléaire
Email : joachim.miss@irsn.fr
- **Sylvain David** : Close Collaborator (2012/2015)
Senior researcher, CNRS
Institut de Physique Nucléaire d'Orsay (IPNO) - UMR 8608
Email : sdavid@ipno.in2p3.fr
- **Doligez Xavier** : Close Collaborator (2012/2015)
Researcher, Institut de Physique Nucléaire d'Orsay
Institut de Physique Nucléaire d'Orsay (IPNO) - UMR 8608
Email : doligez@ipno.in2p3.fr
- **Adrien Bidaud** : Close Collaborator (2012/2015)
Researcher, Ecole des Mines de Nantes
Laboratoire de Physique Subatomique et de Cosmologie de Grenoble (LPSC) - UMR 5821
Email : Adrien.Bidaud@lpsc.in2p3.fr