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.com: bam241

Education

10/2007 - 12/2010	**Ph.D in Sciences, University of Paris XI, France**, "*Search for Giant Pairing Vibration & Life time measurement using PLUNGER method in* ^{74}Zn".
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**, "*Electro-nuclear systems and dynamic fuel cycle calculations*" : developement 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)**, "*Electro-nuclear systems and dynamic fuel cycle calculations*" : 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**, "*Electro-nuclear systems and dynamic fuel cycle calculations*".
10/2007 - 12/2010	**Ph.D, Institut de Physique Nucléaire d'Orsay**, "*Search for Giant Pairing Vibration & Life time measurement using PLUNGER method in* ^{74}Zn : γ and mass spectroscopy, data analysis, C/C++ development.

Teaching

2011/2014	**Lecture in calculus of variations, Ecole des Mines de Nantes (EMN)**, 3×12h. **Projects supervision, EMN**, 2×20h & 3×23h.
2011/2013	**Practical work of Analog electronics, EMN**, 2×18h.
2013	**Master 2 Intership supervision, EMN**, 6 months.
2012	**Master I Intership 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**, *Winter ANS 2016*, 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.***, *Annals of Nuclear Energy*, 81, (2015). - "MOX fuel enrichment prediction in PWR using polynomial models", **B. Mouginot, B. Leniau, T. Thiolière *et al.***, *Annals of Nuclear Energy*,85 (2015).
2014	- "Core Library Advanced Scenario Simulation, Principle & Application." **B. Mouginot, B. Leniau, N. Thiolière *et al.***, *PHYSOR 2014*, Kyoto, Japon (09/2014) : poster.
2013	- "CLASS : Core Library for Advanced Scenario Simulation." **B. Mouginot, N. Thiolière**, *TCADS 2*, Nantes, France : oral presentation. - "A high power ADS concept for the minor actinides transmutation." **N. Thiolière, B. Mouginot, J.B. Clavel**, *TCADS 2*, Nantes, France : oral presentation.
2012	- "GEDEPEON Bilan" **B. Mouginot, N. Thiolière and J.B. Clavel**, *GEDEPEON*, 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.***, *Physical Review C*, 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.***, *Physical Review C*, 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.***, *EURORIB'10*, Lamoura, France : oral presentation.
2008	- "Search of the Giant Pairing Vibration mode in nuclei", **B. Mouginot, E. Khan, R. Neveling *et al.***, *LEA COLLIGA Meeting*, Catane, Italie : oral presentation. - "Giant Pairing Vibrations : experimental overview", **B. Mouginot, E. Khan, R. Neveling *et al.***, *Probing pair correlations : experimental tools and associated models, Workshop*, 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-EXOGAM campaign**, GANIL, France : participation to ^{20}O(d,t) experiment and data analysis of the ^{36}S$(d,t)/(d,^3$He$)$ test experiment.

Scientific communiations

Peer review articles

2015 "Prediction of required MgO volumic fraction in ADS fuel dedicated to minor actinides transmutation", **N. Thiollière, 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}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. Göttsche, 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 26Si 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}O(d,t) reaction with the TIARA-MUST2-VAMOS-EXOGAM 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. Mouginot, P.P.H. Wilson, R.W. Carlsen**, *Winter ANS 2016*, Las Vegas, U.S.A (11/2016) : oral presentation.

"Transition Analysis with Cyclus" **B. Mouginot *et al.***, *Dynamic Nuclear Fuel Cycle Workshop*, Paris, France (2016) : oral presentation.

2015 "CLASS Overview" **B. Mouginot**, *CLASS/CYCLUS Workshop*, Madison, Wisonsin, USA (2015) : oral presentation.

"French Fleet Application" **B. Mouginot**, *CLASS/CYCLUS Workshop*, Madison, Wisconsin, USA (2015) : oral presentation.

2012 "CLASS, a New Tool for Nuclear Scenarios" **B. Mouginot, 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. Mouginot, M. Niikura *et al.***, *EURORIB'10*, Lamoura, France (2010) : oral presentation.

2008 "Giant pairing vibrations : experimental overview", **B. Mouginot, 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. Mouginot, 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