

## Baptiste MOUGINOT

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## Education

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

## Professional experiences

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10/2015 - now	<b>Scientist, Departement of Nuclear Engineering, University of Wisconsin-Madison</b> , " <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	<b>Scientist, Subatech, Nantes (FRANCE)</b> , " <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	<b>Postdoctoral position, Subatech</b> , " <i>Electro-nuclear systems and dynamic fuel cycle calculations</i> ".
10/2007 - 12/2010	<b>Ph.D, Institut de Physique Nucléaire d'Orsay</b> , " <i>Search for Giant Pairing Vibration &amp; Life time measurement using PLUNGER method in <math>^{74}\text{Zn}</math> : <math>\gamma</math> and mass spectroscopy</i> , data analysis, C/C++ development.

## Experimental contribution

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06/2009 and 10/2009	<b>Plunger experiment <math>^{74}\text{Zn}</math></b> , GANIL, France : simulation, set-up, participation, on-line analysis and data analysis.
03/2009 and 03/2007	<b>GPV experiment</b> , iThemba LABS, South Africa : simulation, participation and data analysis.
09/2008	<b>Beam purification test at LISE line</b> , GANIL, France.
11/2007	<b>TIARA-MUST2-VAMOS-EXOAM campaign</b> , 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.

## Teaching

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

## Main scientific communications

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- 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*, accepted with minor correction (04/2015).
- "Mean Cross Section Prediction in PWR-MOX Using Neural Network " **B. Leniau, B. Mouginot, N. Thiolière et al.**, *GLOBAL 2015*, Paris, France (09/2015) : accepted.
- 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  $^{74}\text{Zn}$  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  $^{78}\text{Ni}$  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.

## Other skills

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**Programmation** : C/C++, Shell Script, MAPPLE.

**Simulation** : LISE++, SRIM, Geant4, MCNP/MCNPX, MURE, CLASS.

**Languages** : English (fluent), French (native speaker), German (scholar).

## Scientific communications

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### 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  $^{80}\text{Ge}$  revealed by the  $\beta$  decay of isomeric states in  $^{80}\text{Ga}$  : Triaxiality in the vicinity of  $^{78}\text{Ni}$ ", **D. Verney, B. Tastet et al.**, *Physical Review C*, 87, (2013).
- 2012 "Lifetime measurement of 2+1 state in  $^{74}\text{Zn}$  by differential plunger method", **M. Niikura, B. Mouginot et al.**, *Physical Review C*, 85, (2012).
- "First  $g(2^+)$  measurement on neutron-rich  $^{72}\text{Zn}$ , 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  $^{27}\text{Ne}$ ", **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  $^{21}\text{O}$ ", **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  $^{84}\text{Ga}$   $\beta$  decay : Evidence for a rapid onset of collectivity in the vicinity of  $^{78}\text{Ni}$ ", **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-EXOAM 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

- 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  $^{74}\text{Zn}$  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  $^{74}\text{Zn}$  with differential Plunger technique", **M. Niikura, B. Mouginot et al.**, *11th Symposium on Nuclei in the Cosmos*, Heidelberg, Allemagne (2010).

- "Spectroscopic study of  $^{26}\text{Si}$  for application to nova gamma-ray emission", **N. de Séréville et al.**, *FINUSTAR3*, Rhodes, Grèce (2010).
- "Spectroscopic study of  $^{26}\text{Si}$  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  $^{72}\text{Zn}$  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-EXOGAM setup", **A. Ramus et al.**, *Japanese French Symposium - New paradigms in Nuclear Physics*, Paris, France (2008).

### **Workshops/Conferences**

- 2016** "Transition Analysis with Cyclus" **B. Mougnot et al.**, *Dynamic Nuclear Fuel Cycle Workshop*, Paris, France (2016) : talk.
- 2015** "CLASS Overview" **B. Mougnot**, *CLASS/CYCLUS Workshop*, Madison, Wisconsin, USA (2015) : talk.
- "French Fleet Application" **B. Mougnot**, *CLASS/CYCLUS Workshop*, Madison, Wisconsin, USA (2015) : talk.
- 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  $^{78}\text{Ni}$  with the plunger technique at GANIL", **B. Mougnot, M. Niikura et al.**, *EURORIB'10*, Lamoura, France (2010) : talk.
- 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) : talk.
- "Search of the Giant Pairing Vibration mode in nuclei", **B. Mougnot, E. Khan, R. Neveling et al.**, *LEA COLLIGA Meeting*, Catane, Italy (2008) : talk.

## References

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- **Faïçal Azaiez** : Scientific Adviser (2007/2010)  
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