

# Wouter Ryssens

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## Research interests

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My goal is to understand **atomic nuclei**, furthering both our understanding of the detailed structure of individual isotopes as well as the quality of our global description of the entirety of the nuclear chart. Often, I rely on **energy density functional theory** and the notion of spontaneous **symmetry breaking**, though I have experience with configuration-interaction approaches as well. My chief aim is the improvement of nuclear structure models for **extrapolation to the unknown regions** of the nuclear chart. In support of this goal, I actively develop new **algorithms** of various kinds to leverage the possibilities of modern computing infrastructure.

**Keywords:** Energy density functional, spontaneous symmetry breaking, mean-field approach, mass models, nuclear deformation, nuclear fission, nuclear level densities, quantum many-body problem, high performance computing, optimization algorithms.

## Experience

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### FNRS Research Associate

INSTITUT D'ASTRONOMIE ET D'ASTROPHYSIQUE, UNIVERSITÉ LIBRE DE BRUXELLES

Brussels, Belgium

Oct. 2023 - PRESENT

### FNRS Postdoctoral Fellow

INSTITUT D'ASTRONOMIE ET D'ASTROPHYSIQUE, UNIVERSITÉ LIBRE DE BRUXELLES

Brussels, Belgium

Oct. 2020 - Sept. 2023

### Postdoctoral Associate

ALHASSID GROUP, YALE UNIVERSITY

New Haven, CT, USA

Sept. 2018 - Sept. 2020

### Postdoctoral Fellow

THEORY GROUP, INSTITUT PHYSIQUE NUCLÉAIRE DE LYON (NOW IP2I LYON)

Lyon, France

Nov. 2016 - Sept. 2018

## Education

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### Université Libre de Bruxelles

PHD IN THEORETICAL NUCLEAR PHYSICS, SUPERVISOR: PROF. P.-H. HEENEN

Brussels, Belgium

Oct. 2012 - Sept. 2016

Thesis: [Symmetry conservation and breaking in nuclear mean-field models](#)

### Katholieke Universiteit Leuven

MASTER IN THEORETICAL PHYSICS, MAGNA CUM LAUDE

Leuven, Belgium

Sept. 2010 – June 2012

Thesis: [On the quantum-to-classical transition of primordial perturbations](#)

### Katholieke Universiteit Leuven

BACHELOR IN PHYSICS, CUM LAUDE

Leuven, Belgium

Sept. 2007 – June 2010

### College van het Eucharistisch Hart

HIGH SCHOOL DIPLOMA, GREEK AND MATHEMATICS, MAGNA CUM LAUDE

Essen, Belgium

Sept. 2001 – June 2007

## Research grants obtained

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### FNRS Postdoctoral Fellow

Brussels, Belgium

INSTITUT D'ASTRONOMIE ET D'ASTROPHYSIQUE, UNIVERSITÉ LIBRE DE BRUXELLES

Oct. 2020 - Oct. 2023

Obtained competitive personal grant to join the Institut d'Astronomie et d'Astrophysique at ULB as postdoctoral fellow from the Belgian FNRS.

# Skills

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## LANGUAGES

**Native** Dutch

**Fluent** French, English

## PROGRAMMING

**Languages** Fortran, python, L<sup>A</sup>T<sub>E</sub>X, bash

**Software** Keras, Unix, git, scipy, numpy, Lapack

# Teaching

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## QUALIFICATIONS

**Conseil National des Universités (FR):** qualified to apply for Maître de conférences positions in France.

## TEACHING ASSISTANT

2014-15	<b>PHYSF305</b> , 4 hours of exercice sessions on introductory nuclear and particle physics.	ULB
2020-21	<b>PHYSF104</b> , 12 hours of exercice sessions on mechanics for 1st year science majors.	ULB
2021-22	<b>PHYSF205</b> , 14 hours of exercice sessions on electromagnetism for 2nd year science majors.	ULB
2020-23	<b>PHYSF103</b> , 48 hours of exercice sessions on mechanics and electromagnetism for 1st year computer science majors.	ULB

# Publications & Communication

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**28** publications authored, among which **12** are first-author papers and **3** are currently in peer-review.

**22** oral contributions to international conferences, **9** of which were on explicit invitation.

**4** posters presented to international conferences.

**11** oral contributions to workshops in Belgium.

**7** seminars given, among which **4** outside of Belgium and **5** on explicit invitation.

# Service to the profession

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## MASTER STUDENTS SUPPORTED

2021-22	<b>Onur Yavas</b> , ‘Effet de la déformation des noyaux au sein des étoiles à neutrons froides non-acréttées.’	ULB
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## GRADUATE STUDENTS SUPPORTED

2018-23	<b>Sohan Vartak</b> : Nuclear Spectroscopy of Heavy Nuclei in the Shell Model Monte Carlo Method.	Yale
2018-20	<b>Paul Fanto</b> : Statistical properties of nuclei: beyond the mean-field approximation.	Yale
2016-18	<b>Pierre Becker</b> : Développement d'une interaction nucléaire effective de nouvelle génération.	IP2I

## TRAINING AND ADVANCED LECTURES

Nov. 2022 **Nuclear DFT**: training session of the LISA consortium, a Marie-Curie Innovative Training Network.

## PEER REVIEW

**APS** **11** reviews for Physical Review A (**1**), Physical Review C (**9**), Physical Review Letters (**3**) and Physical Review X (**1**).

**Elsevier** **3** reviews for Computer Physics Communications(**1**), Heliyon (**1**) and Physics Letters B (**1**).

**Springer** **6** reviews for European Journal of Physics A.

## PUBLICLY AVAILABLE COMPUTER CODES

**EV8** W.Ryssens, V. Hellemans, M. Bender and P.-H. Heenen, Comp. Phys. Comm. 187, 175 (2015). [[GITHUB](#)]

**HF-SHELL** W. Ryssens and Y. Alhassid, Eur. Phys. J. A 57, 76 (2021). [[GITHUB](#)]

# References

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**Dr. T. Duguet** [CEA Saclay]

[thomas.duguet@cea.fr](mailto:thomas.duguet@cea.fr)

**Prof. Dr. Yoram Alhassid** [Yale University]

[yoram.alhassid@yale.edu](mailto:yoram.alhassid@yale.edu)

**Prof. Dr. Piet Van Duppen** [KULeuven]

[piet.vanduppen@kuleuven.be](mailto:piet.vanduppen@kuleuven.be)

**Prof. Dr. Anu Kankainen** [University of Jyväskylä]

[anu.kankainen@jyu.fi](mailto:anu.kankainen@jyu.fi)

**Dr. Michael Bender** [Institut de Physique des 2 Infinis Lyon]

[bender@ip2i.in2p3.fr](mailto:bender@ip2i.in2p3.fr)

**Dr. S. Goriely** [Université Libre de Bruxelles]

[sgoriely@ulb.ac.be](mailto:sgoriely@ulb.ac.be)

# Publications

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## IN PEER REVIEW

1. Precision mass measurements at the JYFLTRAP double Penning trap pin down the mass surface across the neutron midshell at N=66, M. Hukkanen W. Ryssens, P. Ascher et al., [arXiv:2402.12107\[nucl-th\]](https://arxiv.org/abs/2402.12107).
2. Benchmark of many-body approaches for the description of dipole transition strengths, M. Frosini, W. Ryssens and K. Sieja, [arXiv:2312.11040\[nucl-th\]](https://arxiv.org/abs/2312.11040).
3. On the impact of the scheme for center-of-mass correction on the surface energy of Skyrme Energy Density Functionals, P. Da Costa, K. Bennaceur, J. Meyer, W. Ryssens and M. Bender, [arXiv:2310.05090\[nucl-th\]](https://arxiv.org/abs/2310.05090).

## PEER-REVIEWED JOURNAL ARTICLES

1. Binding energies of ground and isomeric states in neutron-rich Ru isotopes: measurements at JYFLTRAP and comparison to theory , M. Hukkanen, W. Ryssens, P. Ascher, M. Bender, T. Eronen, S. Grévy, A. Kankainen, M. Stryjczyk, L. Al Ayoubi, S. Ayet, O. Beliuskina, C. Delafosse, Z. Ge, M. Gerbaux, W. Gins, A. Husson, A. Jaries, S. Kujanpää, M. Mougeot, D.A. Nesterenko, S. Nikas, H. Penttilä, I. Pohjalainen, A. Raggio, M. Reponen, S. Rinta-Antila, A. de Roubin, J. Ruotsalainen, V. Virtanen and A.P. Weaver, *Phys. Rev. C* **108**, 064315 (2023), [arxiv:2306.04517\[nucl-ex\]](https://arxiv.org/abs/2306.04517).
2. Skyrme-Hartree-Fock-Bogoliubov mass models on a 3D mesh: III. From atomic nuclei to neutron stars, G. Grams, W. Ryssens, G. Scamps, S. Goriely and N. Chamel, *Eur. Phys. J. A* **59**, 270 (2023) [arXiv:2307.14276\[nucl-th\]](https://arxiv.org/abs/2307.14276).
3. Evidence of the hexadecapole deformation of Uranium-238 at the Relativistic Heavy Ion Collider, W. Ryssens, G. Giacalone, B. Schenke and C. Shen, *Phys. Rev. Lett.* **130**, 212302 (2023), [arxiv:2302.13617 \[nucl-th\]](https://arxiv.org/abs/2302.13617).
4. Skyrme-Hartree-Fock-Bogoliubov mass models on a 3D Mesh: IIb. the fission properties of BSkG2, W. Ryssens, G. Scamps, S. Goriely and M. Bender, *Eur. Phys. J. A* **59**, 96 (2023) [arxiv:2302.03097 \[nucl-th\]](https://arxiv.org/abs/2302.03097).
5. Odd-odd neutron-rich rhodium isotopes studied with the double Penning trap JYFLTRAP, M. Hukkanen, W. Ryssens, P. Ascher, M. Bender, T. Eronen, S. Grévy, A. Kankainen, M. Stryjczyk, L. Al Ayoubi, S. Ayet, O. Beliuskina, C. Delafosse, W. Gins, M. Gerbaux, A. Husson, A. Jokinen, D. A. Nesterenko, I. Pohjalainen, M. Reponen, S. Rinta-Antila, A. de Roubin and A. P. Weaver, *Phys. Rev. C* **107**, 014306 (2023), [arXiv:2210.10674 \[nucl-ex\]](https://arxiv.org/abs/2210.10674).
6. Skyrme-Hartree-Fock-Bogoliubov mass models on a 3D Mesh: II. time-reversal symmetry breaking, W. Ryssens, G. Scamps, S. Goriely and M. Bender, *Eur. Phys. J. A* **58**, 246 (2022), [arXiv:2208.06455 \[nucl-th\]](https://arxiv.org/abs/2208.06455).
7. Skyrme-Hartree-Fock-Bogoliubov mass models on a 3D Mesh: Effect of triaxial shape, G. Scamps, S. Goriely, E. Olsen, M. Bender and W. Ryssens, *Eur. Phys. J. A* **57**, 333 (2021), [arXiv:2011.07904\[nucl-th\]](https://arxiv.org/abs/2011.07904).
8. Skyrme pseudopotentials at next-to-next-to-leading order. Construction of local densities and first symmetry-breaking calculations. W. Ryssens and M. Bender, *Phys. Rev. C* **104**, 044308 (2021), [arXiv:2104.07697 \[nucl-th\]](https://arxiv.org/abs/2104.07697).
9. Strong enhancement of level densities in the crossover from spherical to deformed Neodymium isotopes, M. Guttormsen, Y. Alhassid, W. Ryssens, K. O. Ay, M. Ozgur, E. Algin, A. C. Larsen, F. L. Bello Garrote, L. Crespo Campo, T. Dahl-Jacobsen, A. Görgen, T. W. Hagen, V. W. Ingeberg, B. V. Kheswa, M. Klintefjord, J. E. Midtbø, V. Modamio, T. Renstrøm, E. Sahin, S. Siem, G. M. Tveten and F. Zeiser, *Phys. Lett. B* **816**, 136206 (2021), [arXiv:2012.01902\[nucl-ex\]](https://arxiv.org/abs/2012.01902).
10. Finite-temperature mean-field approximations for shell model Hamiltonians: the code HF-SHELL, W. Ryssens and Y. Alhassid, *Eur. Phys. J. A* **57**, 76 (2021), [arXiv:2009.01205\[nucl-th\]](https://arxiv.org/abs/2009.01205).
11. Zero-pairing and zero-temperature limits of finite temperature Hartree-Fock-Bogoliubov equations, T. Duguet and W. Ryssens, *Phys. Rev. C* **102**, 044328 (2020), [arXiv:2008.01859\[nucl-th\]](https://arxiv.org/abs/2008.01859).
12. Future of nuclear fission theory, M. Bender, R. Bernard, G. Bertsch, S. Chiba, J. Dobaczewski, N. Dubray, S. A. Giuliani, K. Hagino, D. Lacroix, Z. Li, P. Magierski, J. Maruhn, W. Nazarewicz, J. Pei, S. Péru, N. Pillet, J. Randrup, D. Regnier, P.-G. Reinhard, L. M. Robledo, W. Ryssens, J. Sadukhan, G. Scamps, N. Schunck, C. Simenel, J. Skalski, I. Stetcu, P. Stevenson, S. Umar, M. Verriere, D. Vretenar, M. Warda and S. Åberg, *J. Phys. G* **47**, 113002 (2020), [arXiv:2005.10216\[nucl-th\]](https://arxiv.org/abs/2005.10216).
13. In-beam gamma-ray and electron spectroscopy of  $^{249,251}\text{Md}$ , R. Briselet, Ch. Theisen, B. Sulignano, M. Airiau, K. Auranen, D. M. Cox, F. Déchery, A. Drouart, Z. Favier, B. Gall, T. Goigoux, T. Grahn,

P. T. Greenlees, K. Hauschild, A. Herzann, R.-D. Herzberg, U. Jakobsson, R. Julin, S. Juutinen, J. Konki, M. Leino, A. Lopez-Martens, A. Mistry, P. Nieminen, J. Pakarinen, P. Papadakis, P. Peura, E. Rey-Herme, P. Rahkila, J. Rubert, P. Ruotsalainen, M. Sandzelius, J. Sáren, C. Scholey, J. Sorri, S. Stolze, J. Uusitalo, M. Vandebrouck, A. Ward, M. Zielińska, B. Bally, M. Bender and W. Ryssens, Phys. Rev. C **101**, 014307 (2020), [arXiv:2001.10235 \[nucl-ex\]](https://arxiv.org/abs/2001.10235).

14. Search for octupole-deformed actinium isotopes using resonance ionization spectroscopy,  
E. Verstraelen, A. Teigelhöfer, W. Ryssens, F. Ames, A. Barzakh, M. Bender, R. Ferrer, S. Goriely, P.-H. Heenen, M. Huyse, P. Kunz, J. Lassen, V. Manea, S. Raeder and P. Van Duppen, Phys. Rev. C **100**, 044321 (2019).
15. Iterative approaches to the self-consistent nuclear energy density functional problem: Heavy ball dynamics and potential preconditioning,  
W. Ryssens, M. Bender and P.-H. Heenen, Eur. Phys. J. A **55**, 93 (2019), [arXiv:1812.08262 \[nucl-th\]](https://arxiv.org/abs/1812.08262).
16. The impact of the surface energy coefficient on the deformation properties of atomic nuclei as predicted by Skyrme EDFs,  
W. Ryssens, M. Bender, K. Bennaceur, P.-H. Heenen and J. Meyer, Phys. Rev. C **99**, 044315 (2019), [arXiv:1809.04406 \[nucl-th\]](https://arxiv.org/abs/1809.04406).
17. Shape staggering of midshell mercury isotopes from in-source laser spectroscopy compared with density-functional-theory and Monte Carlo shell-model calculations,  
S. Sels, T. Day Goodacre, B. A. Marsh, A. Pastore, W. Ryssens, Y. Tsunoda, N. Althubiti, B. Andel, A. N. Andreyev, D. Atanasov, A. E. Barzakh, M. Bender, J. Billowes, K. Blaum, T. E. Cocolios, J. G. Cubiss, J. Dobaczewski, G. J. Farooq-Smith, D. V. Fedorov, V. N. Fedossev, K. T. Flanagan, L. P. Gaffney, L. Ghys, P.-H. Heenen, M. Huyse, S. Kreim, D. Lunney, K. M. Lynch, V. Manea, Y. Martinez Palenzuela, T. M. Medonca, P. L. Molkanov, T. Otsuka, J. P. Ramos, R. E. Rossel, S. Rothe, L. Schweikhard, M. D. Seliverstov, P. Spagnoletti, C. Van Beveren, P. Van Duppen, M. Veinhard, E. Verstraelen, A. Welker, K. Wendt, F. Wienholtz, R. N. Wolf and A. Zadvornaya, Phys. Rev. C **99**, 044306 (2019), [arXiv:1902.11211 \[nucl-ex\]](https://arxiv.org/abs/1902.11211).
18. De-excitation of the strongly coupled band in  $^{177}\text{Au}$  and implications for core intruder configurations in the light Hg isotopes,  
M. Venhart, F. A. Ali, W. Ryssens, J. L. Wood, D. T. Joss, A. N. Andreyev, K. Auranen, B. Bally, M. Balogh, M. Bender, R. J. Carroll, J. L. Easton, P. T. Greenlees, T. Grahn, P.-H. Heenen, A. Herzán, U. Jakobsson, R. Julin, S. Juutinen, D. Kíč, J. Konki, E. Lawrie, M. Leino, V. Matoušek, C. G. McPeake, D. O'Donnell, R. D. Page, J. Pakarinen, J. Partanen, P. Peura, P. Rahkila, P. Ruotsalainen, M. Sandzelius, J. Sarén, B. Saygi, M. Sedláček, C. Scholey, J. Sorri, S. Stolze, A. Thorntwaite, J. Uusitalo and M. Veselský, Phys. Rev. C **95**, 061302 (2017).
19. Numerical accuracy of mean-field calculations in coordinate space,  
W. Ryssens, P.-H. Heenen and M. Bender, Phys. Rev. C **92**, 064318 (2015), [arXiv:1509.00252 \[nucl-th\]](https://arxiv.org/abs/1509.00252).
20. Solution of the Skyrme-HF+BCS equation on a 3D mesh, II: A new version of the EV8 code,  
W. Ryssens, V. Hellmanns, M. Bender and P.-H. Heenen, Comp. Phys. Comm. **187**, 175 (2015), [arXiv:1405.1897 \[nucl-th\]](https://arxiv.org/abs/1405.1897).

## PEER-REVIEWED CONFERENCE PROCEEDINGS

1. The mass of odd-odd nuclei in microscopic mass models ,  
W. Ryssens, G. Scamps, G. Grams, I. Kullmann, M. Bender and S. Goriely, J. Phys. Conf. **2586**, 012097 (2023), [arxiv:2211.03667 \[nucl-th\]](https://arxiv.org/abs/2211.03667).
2. Progress on Brussels-Skyrme atomic mass models on a grid: stiff neutron matter equation of state,  
G. Grams, W. Ryssens, G. Scamps, S. Goriely and N. Chamel, J. Phys. Conf. **2586**, 012040 (2023), [arxiv:2211.03592 \[nucl-th\]](https://arxiv.org/abs/2211.03592).
3. Progress in Nuclear Astrophysics: a multi-disciplinary field with still many open questions,  
S. Goriely, A. Choplin, W. Ryssens and I. Kullmann, J. Phys. Conf. **2586**, 012104 (2023), [arxiv:2212.02156 \[nucl-th\]](https://arxiv.org/abs/2212.02156).
4. Towards symmetry-unrestricted Skyrme-HFB in coordinate-space representation: the example of rotational bands of the octupole deformed nucleus  $^{222}\text{Th}$ .  
W. Ryssens, M. Bender and P.-H. Heenen, Acta Physica Polonica B **49**, 339 (2018), [arxiv:1712.03734 \[nucl-th\]](https://arxiv.org/abs/1712.03734).
5. Symmetry unrestricted Skyrme mean-field study of heavy nuclei,  
W. Ryssens, P.-H. Heenen and M. Bender, in proceedings of 54th International Winter Meeting on Nuclear Physics PoS(**BORMIO2016**) 033, [arXiv:1611.01300 \[nucl-th\]](https://arxiv.org/abs/1611.01300).

## OTHER

1. Symmetry breaking in nuclear mean-field models,  
W. Ryssens, PhD Thesis at Université Libre de Bruxelles (2016), [\[DI-fusion link\]](#).
2. On the Quantum-to-Classical Transition of Primordial Perturbations,  
W. Ryssens, Master Thesis at KULeuven (2016), [arXiv:1907.00258 \[gr-qc\]](https://arxiv.org/abs/1907.00258).

# Communication

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## INVITED LECTURES

1. Lecturer in the ‘Advanced Computational Methods’ training session of the LISA consortium (= a Marie-Curie ITN) (Nov. 2022).  
‘Nuclear density functional theory: shapes and radii’, a three-hour lecture with associated homework.

## ORAL CONTRIBUTIONS TO INTERNATIONAL CONFERENCES

1. **Invited** speaker at the ESNT workshop, Saclay, France (November 2023).  
‘A new generation of Skyrme mass models on a mesh.’
2. **Invited** speaker at the ARIS 2023 conference, Avignon, France (June 2023).  
‘Microscopic models of nuclear structure at scale.’
3. **Invited** speaker at the 5th ISOL-FRANCE workshop, Bordeaux, France (March 2023).  
‘Microscopic models of nuclear structure for applications.’
4. **Invited** speaker at the INPC 2022 conference, Cape Town, South Africa (Sept. 2022).  
‘Nuclear mass models for astrophysics.’
5. **Invited** speaker at ‘Nuclear Physics confronts relativistic collisions of isobars’, Heidelberg, Germany (Oct. 2022).  
‘Wood-Saxon subtleties and some Skyrme results from Brussels.’
6. **Invited** speaker at ‘Nuclear Physics confronts relativistic collisions of isobars’, Heidelberg, Germany (May 2022).  
‘The Skyrme EDF: the view from Brussels.’
7. Speaker at ‘8th Workshop on Level Density and Gamma strength’, Oslo, Norway (May 2022).  
‘Nuclear level densities from 3D Brussels Skyrme Models.’
8. Speaker at ‘UK Nuclear Physics Conference’, Surrey, UK (Apr. 2022). [Remote presentation due to COVID-19]  
‘Symmetry breaking on the scale of the nuclear chart.’
9. Speaker at ‘Colloque GANIL’, Autrans-Méaudre, France (Sept. 2021).  
‘Symmetry breaking on the scale of the nuclear chart.’
10. **Invited** speaker at ‘Gogny 2019’, Livermore, USA (Nov. 2019).  
‘Level densities in heavy nuclei.’
11. **Invited** speaker at ‘Future of nuclear theory in fission workshop’, York, UK (Oct. 2019).  
‘Level densities from mean-field approaches.’
12. Speaker at ‘Gordon Research Seminar on Nuclear Chemistry’, New London (NH), USA (June 2019).  
“Thermodynamically consistent calculations of nuclear level densities based on mean field models.”
13. Speaker at ‘7th Workshop on Nuclear level density and Gamma strength’, Oslo, Norway (May 2019).  
‘A thermodynamic approach to level densities in the framework of Skyrme energy density functionals.’
14. Speaker at ‘SSNET 2017’, Gif-sur-Yvette, France (Nov. 2017).  
‘Towards symmetry-unrestricted Skyrme-HFB: Rotation of exotic shapes.’
15. **Invited** speaker at ‘Prospects on the description of odd mass nuclei’, Trento, Italy (Sept. 2017).  
‘Impact of methods and symmetries of quasiparticle excitations in mean-field theory.’
16. Speaker at ‘3rd FIDIPRO-PICS workshop’, Jyväskylä, Finland (Feb. 2017).  
‘On the way to symmetry-unrestricted HFB calculations in coordinate space.’
17. Speaker at ‘54th International Bormio Winter Meeting’, Bormio, Italy (Feb. 2016).  
‘Symmetry-unrestricted Skyrme mean-field study of heavy nuclei.’
18. Speaker at ‘2nd FIDIPRO-PICS workshop’, Lyon, France (Dec. 2015).  
‘The state of MOCCA and some calculations.’
19. Speaker at ‘The future of MR-EDF Theory workshop’, Warsaw, Poland (July 2015).  
‘Symmetry-unrestricted Skyrme mean-field study of heavy nuclei.’
20. Speaker at ‘FIDIPRO-PICS workshop’, Jyväskylä, Finland (May 2015).  
‘On the way to symmetry-unrestricted HFB calculations in coordinate space.’
21. Speaker at ‘NESQ-FIDIPRO workshop on EDFs and optimization’, Jyväskylä, Finland (Nov. 2013).  
‘Precision, Coulomb and the State of MOCCA.’
22. Speaker at ‘NESQ Collaboration meeting’, Bordeaux, France (May 2013).  
‘Development of the MOCCA code.’

## PRESENTATIONS AT WORKSHOPS IN BELGIUM

1. **Invited** speaker at the LUMI-day meeting, Brussels, Belgium (November 2023).  
‘Dense matter in the cosmos: nuclei, pasta and explosions.’
2. **Invited** speaker at the 12th CÉCI Users meeting, Mons, Belgium (April 2023).  
‘Nuclear Astrophysics: from the microscopic description of nuclei to the macroscopic explosion of stars.’
3. Speaker at MANASLU collaboration meeting, Mons, Belgium (June 2022).  
‘Exploring the BSkG mass models.’

4. Speaker at EVEREST collaboration meeting, Mechelen, Belgium (Dec. 2021).  
‘The latest Brussels Models.’
5. Speaker at EVEREST collaboration meeting, Leuven, Belgium (Nov. 2020).  
‘Charge radii around A = 180 with GSk1 and GSk2.’
6. Speaker at EVEREST project kick-off meeting, Leuven, Belgium (Apr. 2018).  
‘(Beyond) mean-field calculations of (super)heavy nuclei’.
7. Speaker at BriX network meeting, Leuven, Belgium (Nov. 2015).  
‘Symmetry unrestricted Skyrme mean-field study of heavy nuclei.’
8. Speaker at BriX network meeting, Liège, Belgium (Mai 2015).  
“Symmetry unrestricted Skyrme mean-field study of heavy nuclei.”
9. Speaker at BriX network meeting, Mol, Belgium (Nov. 2014).  
‘Mean-field cluster configurations on a mesh.’
10. Speaker at BriX network meeting, Gent, Belgium (Mai 2014).  
‘Symmetry breaking in mean-field theory: MOCCA.’
11. Speaker at BriX network meeting, Brussels, Belgium (Dec. 2013).  
‘Mean-field description of rotating ellipsoids in the rare earth region.’

## SEMINARS

1. **Invited** seminar at the IHPC, Strasbourg, France (Dec. 2021).  
‘Symmetry breaking on the scale of the nuclear chart.’
2. **Invited** Seminar for the nuclear theory group, Lyon, France (Jan. 2021). [Remote presentation due to COVID-19]  
‘Automating the implementation of novel EDFs beyond NLO in gradients. The codes Hephaestos & Tantalus.’
3. Seminar at the IAA, Brussels, Belgium (Jan. 2021).  
‘Nuclear structure with MOCCA at ULB.’
4. **Invited** seminar at the SPhN Saclay, Saclay, France (July 2020). [Remote presentation due to COVID-19]  
‘Automating the implementation of novel EDFs beyond NLO in gradients. The codes Hephaestos & Tantalus.’
5. **Invited** seminar at ULB, Brussels, Belgium (Aug. 2018).  
‘Broken symmetries in nuclear mean field approaches with Skyrme functionals’
6. Seminar at IPNL, Lyon, France (May 2018).  
‘Symmetries and their impact on angular momentum in EDF approaches’.
7. **Invited** seminar at the IPNO, Orsay, France (Feb. 2018).  
‘Towards symmetry-unrestricted Skyrme-HFB: MOCCA and its applications.’

## POSTER CONTRIBUTIONS TO INTERNATIONAL CONFERENCES

1. Poster at the ARIS 2023 conference, Avignon, France (June 2023 – upcoming) .  
‘The shape of  $^{238}\text{U}$  and  $^{197}\text{Au}$  as seen in heavy ion collisions.’
2. Poster at the Gordon Research Seminar on Nuclear Chemistry, New London (NH), USA (June 2019).  
‘Thermodynamically consistent calculations of nuclear level densities based on mean field models.’
3. Poster at the “Symmetries and Order: Algebraic Methods in Many Body Systems” conference, New Haven (CT), USA (Sept. 2017).  
‘Shape transitions as a function of nucleon number and spin: Symmetry-broken Skyrme-HFB studies in the Ra region.’
4. Poster at the Mazurian Lakes conference, Ruciane-Nida, Poland (Sept. 2017).  
‘Rotational bands in the Thorium isotopes.’