

## Matthieu LEMAIRE

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29 years old, French  
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44919, Ulsan, South Korea

## WORK EXPERIENCE

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- Since Feb. 2016 • **Nuclear reactor physicist at Ulsan National Institute of Science and Technology (UNIST), Ulsan, South Korea**  
- coupled thermal-fluid / neutronics analysis for Generation-IV reactor MHTGR-350  
- implementation of photon transport physics in in-house Monte Carlo code MCS
- 2012 - 2015 • **Nuclear reactor physicist at French Atomic Energy Commission (CEA), Cadarache, France**  
**Thesis title:** “Validation of photon-heating calculations for the Jules Horowitz Reactor (JHR)”  
- experimental validation of nuclear-data library JEFF3.1.1 for JHR photon-heating calculations  
- interpretation of experimental programs conducted in EOLE and OSIRIS nuclear reactors
- 2012 (6 months) • Nuclear reactor physicist at French Atomic Energy Commission (CEA), Cadarache, France  
- Monte Carlo calculations in support of EOLE zero-power nuclear facility in Cadarache
- 2010 (3 months) • Research assistant at Systems and Control Centre (CAS), Mines ParisTech, Paris  
- bibliographic study in the field of quantum control
- 2009 (1 month) • Bell boy at Honke Bankyu hotel (31 employees), Yunishigawa Onsen, Japan

## EDUCATION

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- 2012 - 2015 • **PhD in simulation and nuclear reactor physics at Aix-Marseille university**  
Graduate school 352 Physics and Material Sciences; CEA / Service of Reactor Physics and Cycle
- 2008 - 2012 • **ENSTA ParisTech (French “grande école”), Paris-Saclay campus**  
Engineering degree, major in nuclear reactor physics and neutron transport physics
- **KIT (Karlsruhe Institute of Technology), Karlsruhe, Germany**  
Academic gap year in 2011 at the faculty of computer science (software design, programming)
- 2006 - 2008 • “Classes préparatoires” (intensive preparation to entrance examinations) MPSI-MP\* (mathematics-physics), Pierre d’Ailly high school and Faidherbe high school, Compiègne and Lille
- 2006 • “Baccalauréat S” (main high-school diploma, science stream) with highest honours, German European section, Pierre d’Ailly high school, Compiègne

## COMPUTER AND LANGUAGE SKILLS

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- Intensive practice of Linux for high-performance computing
  - Programming: Fortran 2003, Python, Java, C/C++
  - Tools: Matlab, Vim, LaTeX, SourceTree, GitHub, Windows pack office, Paraview
  - Nuclear physics codes: TRIPOLI-4 (CEA), MCNP (LANL), MCS (UNIST), PENELOPE (university of Barcelona), DARWIN (CEA), GAMMA+ (KAERI)
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- French native
  - English fluent : TOEIC Listening & Reading Test (980/990; 2010)
  - German fluent : one year in Germany (2011), Goethe-Zertifikat C1 (83.5/100; 2012)
  - Korean conversational : 18 months in South Korea, Test of Proficiency in Korean 2<sup>nd</sup> grade (197/200; 2017)
  - Japanese beginner : 2 months in Japan (2009), Japanese Language Proficiency Test N5 (372/400; 2010)

## INTERESTS

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- Language exchange, chess

## PUBLICATIONS

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### Peer-reviewed journals

1. **M. Lemaire**, H. Lee, N.I. Tak, H.C. Lee, D. Lee, “*Multi-physics steady-state analysis of OECD/NEA Modular High Temperature Gas-cooled Reactor MHTGR-350*”, Journal of Nuclear Science and Technology, 54, 6, 668-680, 2017, doi: [10.1080/00223131.2017.1299649](https://doi.org/10.1080/00223131.2017.1299649)
2. **M. Lemaire**, C. Vaglio-Gaudard, A. Lyoussi, C. Reynard-Carette, “*Impact study on the methodology used for photon-heating determination in Material-Testing Reactors*”, IEEE Transactions on Nuclear Science, 63, 3, 1499-1506, 2016, doi: [10.1109/TNS.2016.2560261](https://doi.org/10.1109/TNS.2016.2560261)
3. **M. Lemaire**, C. Vaglio-Gaudard, A. Lyoussi, C. Reynard-Carette, J. Di Salvo, A. Gruel, “*Experimental validation of photon heating calculation for the Jules Horowitz Reactor*,” Nuclear Instruments and Methods in Physics Research A, 780, 68-80, 2015, doi: [10.1016/j.nima.2015.01.054](https://doi.org/10.1016/j.nima.2015.01.054)
4. **M. Lemaire**, C. Vaglio-Gaudard, A. Lyoussi, C. Reynard-Carette, “*For a better estimation of gamma heating in nuclear material-testing reactors and associated devices: status and work plan from calculation methods to nuclear data*”, Journal of Nuclear Science and Technology, 52, 9, 1093-1101, 2015, doi: [10.1080/00223131.2015.1009957](https://doi.org/10.1080/00223131.2015.1009957)
5. J. Di Salvo, C. Vaglio Gaudard, A. Gruel, B. Geslot, P. Blaise, **M. Lemaire**, “*The AMMON experiment in EOLE zero power facility: a challenging program devoted to the neutron and photon physics*”, Journal of Nuclear Science and Technology, 52, 7-8, 1034-1043, 2015, doi: [10.1080/00223131.2015.1036821](https://doi.org/10.1080/00223131.2015.1036821)
6. C. Vaglio-Gaudard, A.C. Colombier, J.P. Hudelot, O. Leray, **M. Lemaire**, J. Di Salvo, A. Gruel, “*Analysis of the AMMON experimental program in the EOLE facility supporting the qualification of the JHR neutron and photon tools*”, IEEE Transactions on Nuclear Science, 61, 4, 2246-2253, 2014, doi: [10.1109/TNS.2014.2306440](https://doi.org/10.1109/TNS.2014.2306440)
7. C. Vaglio-Gaudard, K. Stoll, R. Ravoux, **M. Lemaire**, A.C. Colombier, J.P. Hudelot, D. Bernard, H. Amharrak, J. Di Salvo, A. Gruel, “*Monte Carlo interpretation of the photon heating measurements in the integral AMMON/REF experiment in the EOLE facility*,” IEEE Transactions on Nuclear Science, 61, 1, 574-583, 2014, doi: [10.1109/TNS.2013.2296356](https://doi.org/10.1109/TNS.2013.2296356)
8. P. Blaise, J. Di Salvo, C. Vaglio-Gaudard, D. Bernard, H. Amharrak, **M. Lemaire**, S. Ravoux, “*Nuclear heating measurement in critical facilities and experimental validation of code and libraries – an application to prompt & delayed gamma nuclear data needs*”, GAMMA-2 scientific workshop on the emission of prompt gamma rays in fission and related topics, Physics Procedia, 59, 3-16, 2014, doi: [10.1016/j.phpro.2014.10.002](https://doi.org/10.1016/j.phpro.2014.10.002)

### International conferences

1. **M. Lemaire**, H. Lee, B. Ebiwonjumi, C. Kong, W. Kim, Y. Jo, J. Park, D. Lee, “*Recent work on photon transport with UNIST Monte Carlo code MCS*”, Proc. Int. Conf. RPHA17, Chengdu, China, 2017
2. C. Kong, H. Lee, **M. Lemaire**, W. Kim, Y. Jo, J. Park, J. Choe, B. Ebiwonjumi, D. Lee, “*Introduction to UNIST spent nuclear fuel transportation package analysis code system*”, Proc. Int. Conf. RPHA17, Chengdu, China, 2017
3. B. Ebiwonjumi, S. Choi, **M. Lemaire**, D. Lee, H.C. Shin, “*Experimental validation of STREAM for spent nuclear fuel applications*”, Proc. Int. Conf. RPHA17, Chengdu, China, 2017
4. K.H.N. Nguyen, J. Choe, S. Choi, H. Lee, W. Kim, **M. Lemaire**, D. Lee, “*Verification of STREAM for OPR-1000 fuel assembly depletion calculations*”, Proc. Int. Conf. RPHA17, Chengdu, China, 2017
5. W. Lee, S. Choi, B. Ebiwonjumi, **M. Lemaire**, D. Lee, “*Implementation of on-the-fly energy release per fission model in STREAM*”, Proc. Int. Conf. RPHA17, Chengdu, China, 2017
6. **M. Lemaire**, H. Lee, N.I. Tak, H.C. Lee, D. Lee, “*Monte Carlo / thermal-fluids coupled calculations for MHTGR-350MW benchmark*”, Proc. Int. Conf. M&C 2017, Jeju, South Korea, 2017
7. **M. Lemaire**, H. Lee, N.I. Tak, H.C. Lee, D. Lee, “*MHTGR-350MW coupled steady-state results using MCS and GAMMA+*”, Proc. KNS Autumn Meeting, Gyeongju, South Korea, 2016
8. **M. Lemaire**, C. Vaglio-Gaudard, A. Lyoussi, C. Reynard-Carette, “*Methodology comparison for gamma-heating calculations in Material-Testing Reactor*”, Proc. Int. Conf. ANIMMA-2015, Lisbon, Portugal, 2015
9. H. Amharrak, **M. Lemaire**, C. Reynard-Carette, D. Fourmentel, A. Lyoussi, C. Vaglio-Gaudard, M. Carette, “*Monte-Carlo simulations of the nuclear energy deposition inside the CARMEN-1P differential calorimeter irradiated into OSIRIS reactor*”, Proc. Int. Conf. ANIMMA-2015, Lisbon, Portugal, 2015
10. C. Vaglio-Gaudard, A.C. Colombier, **M. Lemaire**, J. Di Salvo, A. Gruel, “*Monte Carlo analysis of reactivity effect measurements in the AMMON experimental program dedicated to JHR neutron studies*”, Proc. Int. Conf. PHYSOR-2014, Kyoto, Japan, 2014
11. **M. Lemaire**, C. Vaglio-Gaudard, A. Lyoussi, C. Reynard-Carette, “*For a better estimation of gamma-heating in experimental reactors and devices: stakes and work plan from calculation methods to nuclear data*”, Proc. of Int. Conf. ANIMMA-2013, Marseille, France, 2013
12. C. Vaglio-Gaudard, O. Leray, **M. Lemaire**, A.C. Colombier, J.P. Hudelot, “*First feedback with the AMMON integral experiment for the JHR calculations*”, Proc. of Int. Conf. WONDER-2012, Aix-en-Provence, France, 2012