

Kyle Godbey

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Education

- 2015–Current **Graduate Student of Physics**, *Vanderbilt University*, Nashville, TN.
2015–2017 **Masters of Arts in Physics**, *Vanderbilt University*, Nashville, TN.
2011–2015 **Bachelor of Arts in Physics, Minor in Computer Science**, *Berea College*, Berea, KY, Cum Laude.

Research Experience

- 2015–Current **Vanderbilt University**, *Theoretical Nuclear Dynamics/Reactions*.
Using time-dependent density functional theory (TDDFT) and its extensions to study low-energy nuclear reactions. Advised by Prof. Sait Umar.
- May 2018, **Visiting Researcher**, *Australian National University*, Canberra, Australia.
March 2019 Invited guest of Prof. Cedric Simenel at the Australian National University primarily investigating low-energy nuclear reactions using TDDFT.
- Fall 2014 **Frankfurt Institute for Advanced Studies**, *Theoretical Study of Nuclear Decay Modes in Neutron Rich Super Heavy Elements*.
Theoretical study into characteristics and properties of extremely neutron rich elements under the supervision of Prof. Walter Greiner.
- Summer 2014 **GSI Helmholtz Centre for Heavy Ion Research**, *Mass Measurements of Heavy Ions using SHIPTRAP Detector*.
Work done using the SHIPTRAP detector at GSI to obtain direct measurements of heavy ions produced by the SHIP (Separator for Heavy Ion reaction Products) velocity filter. The project was supervised by Dr. Michael Block

Teaching Experience

- Fall 2018 **Practice and Pedagogy Leader**, *Vanderbilt University Center for Teaching*, Nashville, TN.
Position co-leading the pedagogical component of incoming teaching assistant orientation for physics.
- 2015–2017 **Physics Teaching Assistant**, *Vanderbilt University*, Nashville, TN.
Position teaching undergraduate lab courses in the physics department at Vanderbilt.
- Fall 2017 **Teaching Affiliate**, *Vanderbilt University Center for Teaching*, Nashville, TN.
Position leading the orientation of a group of incoming teaching assistants and organizing follow-up sessions to ease the transition into a teaching role at the university.
- 2013–2015 **Physics Teaching Assistant**, *Berea College Physics Department*, Berea, KY.
Position working with students to help with their studies in physics, as well as continuing the research duties mentioned above.
- 2013–2015 **Computer Science Teaching Assistant**, *Berea College Computer Science Department*, Berea, KY.
Position tutoring students and assisting development of a new introductory programming course.

Conferences

- 2019 **69th Lindau Nobel Laureate Meeting**, *Lindau, Germany.*
- 2014 **National Conference on Undergraduate Research**, *University of Kentucky.*
- 2013 **99th Annual Meeting of the Kentucky Academy of Sciences**, *Morehead State University.*

Workshops/Summer Schools

- 2019 **Machine Learning Applied to Nuclear Physics FRIB-Theory Alliance Summer School**, *Michigan State University.*
- 2018 **Frontiers in Nuclear and Hadronic Physics Nuclear Reactions Workshop**, *Galileo Galilei Institute.*
- 2016 **Density Functional Theory TALENT School**, *University of York.*
- 2014 **GSI Summer Student Program**, *GSI.*

Awards

- 2018 **Most Outstanding Student Publication Award**, *Vanderbilt University.*
Awarded yearly to “recognize the most outstanding student publication for a paper published during the previous calendar year”
- 2017 **A.V. Ramayya Award**, *Vanderbilt University.*
Awarded yearly to “the most outstanding physics or astronomy graduate student Teaching Assistant”
- 2016 **Robert T. Lagemann Award**, *Vanderbilt University.*
Awarded yearly to an “entering or first-year graduate student for exceptional promise in physics”
- 2014 **Global Education Opportunity (GEO) Scholarship**, *Berea College.*
- 2013 **Physics Presentation Award**, *Kentucky Academy of Sciences.*
- 2012 **Vincit Qui Patitur**, *Berea College.*
- 2011-2013 **Dean’s List**, *Berea College.*
- 2010 **Governor’s Scholar Program**, *Centre College.*

Computer skills

- Programming Languages Fortran, Python, C++, Racket, PHP
- Paradigms High performance computing, Parallel computing, Machine learning

Society memberships

- American Physical Society
- Society of Physics Students
- Sigma Pi Sigma Physics Honor Society

Journal Articles

- [1] K. Godbey, L. Guo, and A. S. Umar, "Influence of the tensor interaction on heavy-ion fusion cross sections", arXiv e-prints, arXiv:1909.04005 (Submitted) (2019).
- [2] K. Godbey, C. Simenel, and A. S. Umar, "Absence of hindrance in a microscopic $^{12}\text{C} + ^{12}\text{C}$ fusion study", Phys. Rev. C **100**, 024619 (2019).
- [3] K. Godbey, A. S. Umar, and C. Simenel, "Deformed shell effects in $^{48}\text{Ca} + ^{249}\text{Bk}$ quasifission fragments", Phys. Rev. C **100**, 024610 (2019).
- [4] L. Guo, K. Godbey, and A. S. Umar, "Influence of the tensor force on the microscopic heavy-ion interaction potential", Phys. Rev. C **98**, 064607 (2018).
- [5] C. Simenel, A. S. Umar, K. Godbey, M. Dasgupta, and D. J. Hinde, "How the Pauli exclusion principle affects fusion of atomic nuclei", Phys. Rev. C **95**, 031601 (Rapid Communication) (2017).
- [6] K. Godbey, A. S. Umar, and C. Simenel, "Dependence of fusion on isospin dynamics", Phys. Rev. C **95**, 011601 (Rapid Communication) (2017).
- [7] V. Tarasov, K. Gridnev, S. Schramm, V. Kuprikov, D. Gridnev, D. Tarasov, K. Godbey, X. Viñas, and W. Greiner, "Light exotic nuclei with extreme neutron excess and $2 \leq Z \leq 8$ ", International Journal of Modern Physics E **24**, 1550057 (2015).

Conference Proceedings

- [1] A. S. Umar, C. Simenel, and K. Godbey, "Equilibration dynamics and isospin effects in nuclear reactions", in , Vol. 41, 5 (Sept. 2019), p. 173.
- [2] C. Simenel, K. Godbey, A. S. Umar, K. Vo-Phuoc, M. Dasgupta, D. J. Hinde, and E. C. Simpson, "Effect of Pauli repulsion and transfer on fusion", in 7th International Conference on Heavy-Ion Collisions at Near-Barrier Energies (FUSION17) Hobart, Tasmania, February 20-24, 2017 (2017).
- [3] C. Simenel, M. Dasgupta, D. J. Hinde, K. Godbey, and A. S. Umar, "Microscopic Approach To Heavy-ion Fusion: role of the Pauli principle", in Proceedings of The 26th International Nuclear Physics Conference (INPC2016). 11-16 September, 2016. Adelaide, Australia. id.212 (2016), p. 212.
- [4] V. Tarasov, K. Gridnev, W. Greiner, V. Kuprikov, D. Gridnev, D. Tarasov, X. Viñas, and K. Godbey, "Investigating the properties of nuclei with extreme neutron excess and $2 \leq Z \leq 8$ ", in , Vol. 79, 7 (2015), pp. 819–822.

Popular Science

- [1] K. Godbey, *Physics ex Machina*, (2019) <https://www.lindau-nobel.org/physics-ex-machina/>.