

Bison References

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Journal Papers

- J. Hales, A. Toptan, W. Jiang, and B. Spencer, “Numerical evaluation of AGR-2 fission product release,” *Journal of Nuclear Materials*, vol. 558, p. 153325, 2022. [Online]. Available: <https://www.sciencedirect.com/science/article/pii/S0022311521005481>
- K. Gamble, T. Knight, E. Roberts, J. Hales, and B. Spencer, “Mechanistic verification of empirical UO₂ fuel fracture models,” *Journal of Nuclear Materials*, vol. 556, p. 153163, 2021. [Online]. Available: <https://www.sciencedirect.com/science/article/pii/S002231152100386X>
- A. Toptan, W. Jiang, J. D. Hales, B. W. Spencer, A. Casagrande, and S. R. Novascone, “FEA-aided investigation of the effective thermal conductivity in a medium with embedded spheres,” *Nuclear Engineering and Design*, vol. 381, p. 111355, 2021. [Online]. Available: <https://www.sciencedirect.com/science/article/pii/S0029549321003071>
- J. Yu, C. D. Blakely, J. D. Hales, and H. Zhang, “Accident tolerant fuel rod failure under low stress: A case study of BWR under station blackout using Bison,” *Journal of Nuclear Materials*, p. 153037, 2021. [Online]. Available: <https://www.sciencedirect.com/science/article/pii/S0022311521002609>
- R. L. Williamson, J. D. Hales, S. R. Novascone, G. Pastore, K. A. Gamble, B. W. Spencer, W. Jiang, S. A. Pitts, A. Casagrande, D. Schwen, A. X. Zabriskie, A. Toptan, R. Gardner, C. Matthews, W. Liu, and H. Chen, “BISON: A flexible code for advanced simulation of the performance of multiple nuclear fuel forms,” *Nuclear Technology*, vol. 207, no. 7, pp. 954–980, 2021.
- J. D. Hales, W. Jiang, A. Toptan, and K. A. Gamble, “Modeling fission product diffusion in TRISO fuel particles with BISON,” *Journal of Nuclear Materials*, vol. 548, p. 152840, 2021. [Online]. Available: <https://www.sciencedirect.com/science/article/pii/S0022311521000635>
- W. Jiang, J. D. Hales, B. W. Spencer, B. P. Collin, A. E. Slaughter, S. R. Novascone, A. Toptan, K. A. Gamble, and R. Gardner, “TRISO particle fuel performance and failure analysis with BISON,” *Journal of Nuclear Materials*, vol. 548, p. 152795, 2021. [Online]. Available: <http://www.sciencedirect.com/science/article/pii/S0022311521000180>
- G. Pastore, R. L. Williamson, R. J. Gardner, S. R. Novascone, J. B. Tompkins, K. A. Gamble, and J. D. Hales, “Analysis of fuel rod behavior during loss-of-coolant accidents using the BISON code: Cladding modeling developments and simulation of separate-effects experiments,” *Journal of Nuclear Materials*, vol. 543, p. 152537, 2021. [Online]. Available: <https://www.sciencedirect.com/science/article/pii/S0022311520311454>

- G. Pastore, K. A. Gamble, R. L. Williamson, S. R. Novascone, R. J. Gardner, and J. D. Hales, “Analysis of fuel rod behavior during loss-of-coolant accidents using the BISON code: Fuel modeling developments and simulation of integral experiments,” *Journal of Nuclear Materials*, vol. 545, p. 152645, 2021. [Online]. Available: <https://www.sciencedirect.com/science/article/pii/S0022311520312538>
- A. Toptan, N. W. Porter, J. D. Hales, B. W. Spencer, M. Pilch, and R. L. Williamson, “Construction of a Code Verification Matrix for Heat Conduction With Finite Element Code Applications,” *Journal of Verification, Validation and Uncertainty Quantification*, vol. 5, no. 4, p. 041002, 12 2020. [Online]. Available: <https://asmedigitalcollection.asme.org/verification/article/5/4/041002/1090520/Construction-of-a-Code-Verification-Matrix-for>
- A. Toptan, J. D. Hales, R. L. Williamson, S. R. Novascone, G. Pastore, and D. J. Kropaczek, “Modeling of gap conductance for LWR fuel rods applied in the BISON code,” *Journal of Nuclear Science and Technology*, vol. 57, no. 8, pp. 963–974, 2020. [Online]. Available: <https://www.tandfonline.com/doi/full/10.1080/00223131.2020.1740808>
- W. Jiang, B. W. Spencer, and J. E. Dolbow, “Ceramic nuclear fuel fracture modeling with the extended finite element method,” *Engineering Fracture Mechanics*, vol. 223, p. 106713, 2020. [Online]. Available: <http://www.sciencedirect.com/science/article/pii/S0013794419307568>
- T. Barani, G. Pastore, D. Pizzocri, D. Andersson, C. Matthews, A. Alfonsi, K. Gamble, P. V. Uffelen, L. Luzzi, and J. Hales, “Multiscale modeling of fission gas behavior in u3si2 under lwr conditions,” *Journal of Nuclear Materials*, vol. 522, pp. 97 – 110, 2019. [Online]. Available: <http://www.sciencedirect.com/science/article/pii/S0022311519301151>
- P. V. Uffelen, J. Hales, W. Li, G. Rossiter, and R. Williamson, “A review of fuel performance modelling,” *Journal of Nuclear Materials*, vol. 516, pp. 373–412, 2019. [Online]. Available: <http://www.sciencedirect.com/science/article/pii/S0022311518310298>
- T. Barani, D. Pizzocri, G. Pastore, L. Luzzi, and J. Hales, “Isotropic softening model for fuel cracking in BISON,” *Nuclear Engineering and Design*, vol. 342, pp. 257–263, 2019. [Online]. Available: <http://www.sciencedirect.com/science/article/pii/S0029549318310173>
- Y. Che, G. Pastore, J. Hales, and K. Shirvan, “Modeling of Cr2O3-doped UO2 as a near-term accident tolerant fuel for LWRs using the BISON code,” *Nuclear Engineering and Design*, vol. 337, pp. 271–278, 2018. [Online]. Available: <http://www.sciencedirect.com/science/article/pii/S002954931830102X>
- M. Wagih, B. Spencer, J. Hales, and K. Shirvan, “Fuel performance of chromium-coated zirconium alloy and silicon carbide accident tolerant fuel claddings,” *Annals of Nuclear Energy*, vol. 120, pp. 304–318, 2018. [Online]. Available: <https://www.sciencedirect.com/science/article/pii/S0306454918303037>
- S. Novascone, P. Medvedev, J. Peterson, Y. Zhang, and J. Hales, “Modeling porosity migration in LWR and fast reactor MOX fuel using the finite element method,” *Journal of Nuclear Materials*, vol. 508, pp. 226–236, 2018. [Online]. Available: <http://www.sciencedirect.com/science/article/pii/S0022311518302861>

- D. Pizzocri, G. Pastore, T. Barani, A. Magni, L. Luzzi, P. V. Uffelen, S. Pitts, A. Alfonsi, and J. Hales, “A model describing intra-granular fission gas behaviour in oxide fuel for advanced engineering tools,” *Journal of Nuclear Materials*, vol. 502, pp. 323 – 330, 2018. [Online]. Available: <http://www.sciencedirect.com/science/article/pii/S0022311517315039>
- K. Gamble, T. Barani, D. Pizzocri, J. Hales, K. Terrani, and G. Pastore, “An investigation of FeCrAl cladding behavior under normal operating and loss of coolant conditions,” *Journal of Nuclear Materials*, vol. 491, pp. 55–66, 2017. [Online]. Available: <https://www.sciencedirect.com/science/article/pii/S0022311516312740>
- B. Spencer, R. Williamson, D. Stafford, S. Novascone, J. Hales, and G. Pastore, “3D modeling of missing pellet surface defects in BWR fuel,” *Nuclear Engineering and Design*, vol. 307, pp. 155–171, 2016. [Online]. Available: <https://www.sciencedirect.com/science/article/pii/S0029549316302187>
- R. Williamson, K. Gamble, D. Perez, S. Novascone, G. Pastore, R. Gardner, J. Hales, W. Liu, and A. Mai, “Validating the BISON fuel performance code to integral LWR experiments,” *Nuclear Engineering and Design*, vol. 301, pp. 232–244, 2016. [Online]. Available: <https://www.sciencedirect.com/science/article/pii/S0029549316000789>
- S. Novascone, B. Spencer, J. Hales, and R. Williamson, “Evaluation of coupling approaches for thermomechanical simulations,” *Nuclear Engineering and Design*, vol. 295, pp. 910–921, 2015. [Online]. Available: <https://www.sciencedirect.com/science/article/pii/S0029549315002757>
- X. Wu, T. Kozlowski, and J. D. Hales, “Neutronics and fuel performance evaluation of accident tolerant FeCrAl cladding under normal operation conditions,” *Annals of Nuclear Energy*, vol. 85, pp. 763–775, 2015. [Online]. Available: <https://www.sciencedirect.com/science/article/pii/S0306454915003461>
- D. Stafford, “Multidimensional simulations of hydrides during fuel rod lifecycle,” *Journal of Nuclear Materials*, vol. 466, pp. 362–372, 2015. [Online]. Available: <https://www.sciencedirect.com/science/article/pii/S0022311515300623>
- J. D. Hales, M. R. Tonks, K. Chockalingam, D. M. Perez, S. R. Novascone, B. W. Spencer, and R. L. Williamson, “Asymptotic expansion homogenization for multiscale nuclear fuel analysis,” *Computational Materials Science*, vol. 99, pp. 290–297, March 2015. [Online]. Available: <http://dx.doi.org/10.1016/j.commatsci.2014.12.039>
- J. Hales, M. Tonks, F. Gleicher, B. Spencer, S. Novascone, R. Williamson, G. Pastore, and D. Perez, “Advanced multiphysics coupling for LWR fuel performance analysis,” *Annals of Nuclear Energy*, vol. 84, pp. 98–110, 2015, multi-Physics Modelling of LWR Static and Transient Behaviour. [Online]. Available: <https://www.sciencedirect.com/science/article/pii/S0306454914005830>
- G. Pastore, L. Swiler, J. Hales, S. Novascone, D. Perez, B. Spencer, L. Luzzi, P. Van Uffelen, and R. Williamson, “Uncertainty and sensitivity analysis of fission gas behavior in

- engineering-scale fuel modeling,” *Journal of Nuclear Materials*, vol. 456, pp. 398–408, 2015. [Online]. Available: <https://www.sciencedirect.com/science/article/pii/S0022311514006771>
- H. Huang, B. Spencer, and J. Hales, “Discrete element method for simulation of early-life thermal fracturing behavior in ceramic nuclear fuel pellets,” *Nuclear Engineering and Design*, vol. 278, pp. 515–528, 2014. [Online]. Available: <https://www.sciencedirect.com/science/article/pii/S0029549314004440>
- O. Courty, A. T. Motta, and J. D. Hales, “Modeling and simulation of hydrogen behavior in Zircaloy-4 fuel cladding,” *Journal of Nuclear Materials*, vol. 452, no. 1, pp. 311–320, 2014. [Online]. Available: <https://www.sciencedirect.com/science/article/pii/S0022311514002803>
- J. Hales, S. Novascone, B. Spencer, R. Williamson, G. Pastore, and D. Perez, “Verification of the BISON fuel performance code,” *Annals of Nuclear Energy*, vol. 71, pp. 81–90, 2014. [Online]. Available: <https://www.sciencedirect.com/science/article/pii/S0306454914001492>
- M. Teague, M. Tonks, S. Novascone, and S. Hayes, “Microstructural modeling of thermal conductivity of high burn-up mixed oxide fuel,” *Journal of Nuclear Materials*, vol. 444, no. 1, pp. 161–169, 2014. [Online]. Available: <https://www.sciencedirect.com/science/article/pii/S0022311513011112>
- J. Hales, R. Williamson, S. Novascone, D. Perez, B. Spencer, and G. Pastore, “Multidimensional multiphysics simulation of TRISO particle fuel,” *Journal of Nuclear Materials*, vol. 443, no. 1, pp. 531–543, 2013. [Online]. Available: <https://www.sciencedirect.com/science/article/pii/S0022311513009586>
- M. Tonks, P. Millett, P. Nerikar, S. Du, D. Andersson, C. Stanek, D. Gaston, D. Andrs, and R. Williamson, “Multiscale development of a fission gas thermal conductivity model: Coupling atomic, meso and continuum level simulations,” *Journal of Nuclear Materials*, vol. 440, no. 1, pp. 193–200, 2013. [Online]. Available: <https://www.sciencedirect.com/science/article/pii/S0022311513007150>
- R. Williamson, J. Hales, S. Novascone, M. Tonks, D. Gaston, C. Permann, D. Andrs, and R. Martineau, “Multidimensional multiphysics simulation of nuclear fuel behavior,” *Journal of Nuclear Materials*, vol. 423, no. 1, pp. 149–163, 2012. [Online]. Available: <https://www.sciencedirect.com/science/article/pii/S0022311512000165>
- J. D. Hales, S. R. Novascone, R. L. Williamson, D. R. Gaston, and M. R. Tonks, “Solving nonlinear solid mechanics problems with the Jacobian-free Newton Krylov method,” *Computer Modeling in Engineering and Sciences*, vol. 84, no. 2, pp. 123–154, 2012. [Online]. Available: <https://www.techscience.com/CMES/v84n2/25811>
- K. Chockalingam, M. R. Tonks, J. D. Hales, D. R. Gaston, P. C. Millett, and L. Zhang, “Crystal plasticity with Jacobian-free Newton–Krylov,” *Computational Mechanics*, vol. 51, pp. 617–627, 2013. [Online]. Available: <https://link.springer.com/article/10.1007/s00466-012-0741-7>

- D. Gaston, L. Guo, G. Hansen, H. Huang, R. Johnson, H. Park, R. Podgorney, M. Tonks, and R. Williamson, “Parallel algorithms and software for nuclear, energy, and environmental applications. Part I: Multiphysics algorithms,” *Communications in Computational Physics*, vol. 12, no. 3, pp. 807–833, 2012. [Online]. Available: <https://www.cambridge.org/core/journals/communications-in-computational-physics/article/abs/parallel-algorithms-and-software-for-nuclear-energy-and-environmental-applications-part-i-multiphysics-algorithms/CA5B1E3481C1E6C3592B414D7EAD1875>
- D. Gaston, L. Guo, G. Hansen, H. Huang, R. Johnson, D. Knoll, C. Newman, H. Park, R. Podgorney, M. Tonks, and R. Williamson, “Parallel algorithms and software for nuclear, energy, and environmental applications. Part II: Multiphysics software,” *Communications in Computational Physics*, vol. 12, no. 3, pp. 834–865, 2012. [Online]. Available: <https://www.cambridge.org/core/journals/communications-in-computational-physics/article/abs/parallel-algorithms-and-software-for-nuclear-energy-and-environmental-applications-part-ii-multiphysics-software/D1EAC9D5ED232D2DD1276FEF37B2E80E>
- R. Williamson, “Enhancing the ABAQUS thermomechanics code to simulate multipellet steady and transient LWR fuel rod behavior,” *Journal of Nuclear Materials*, vol. 415, no. 1, pp. 74–83, 2011. [Online]. Available: <https://www.sciencedirect.com/science/article/pii/S0022311511005228>
- C. Newman, G. Hansen, and D. Gaston, “Three dimensional coupled simulation of thermomechanics, heat, and oxygen diffusion in uo2 nuclear fuel rods,” *Journal of Nuclear Materials*, vol. 392, no. 1, pp. 6–15, 2009. [Online]. Available: <https://www.sciencedirect.com/science/article/pii/S0022311509004450>
- M. Tonks, D. Gaston, C. Permann, P. Millett, G. Hansen, and D. Wolf, “A coupling methodology for mesoscale-informed nuclear fuel performance codes,” *Nuclear Engineering and Design*, vol. 240, no. 10, pp. 2877–2883, 2010, 4th International Topical Meeting on High Temperature Reactor Technology (HTR 2008), with Regular Papers. [Online]. Available: <https://www.sciencedirect.com/science/article/pii/S002954931000419X>

Conference Papers

- K. A. Gamble, “Modeling axial relocation of fragmented fuel during loss of coolant conditions using the Bison fuel performance code,” in *TopFuel 2018 Conference Proceedings*, Prague, Czech Republic, September 30–October 5, 2018.
- K. A. Gamble, J. D. Hales, G. Pastore, T. Barani, D. Pizzocri, and K. A. Terrani, “Fuel performance modeling of FeCrAl cladding failure during loss of coolant conditions,” in *Water Reactor Fuel Performance Meeting 2017 Conference Proceedings*, Jeju Island, Korea, September 10–14, 2017.
- J. D. Hales and K. A. Gamble, “Modelling advanced technology fuels,” in *Enlarged Halden Programme Group Meeting*, Lillehammer, Norway, September 24–28, 2017.
- R. L. Williamson, G. Pastore, B. W. Spencer, and J. D. Hales, “BISON validation for LOCA and PCMI behaviour using measurements from the Halden Reactor Project,” in *Enlarged Halden Programme Group Meeting*, Lillehammer, Norway, September 24–28, 2017.
- G. Pastore, C. P. Folsom, R. L. Williamson, and J. D. Hales, “Modeling fission gas behavior with the BISON fuel performance code,” in *Enlarged Halden Programme Group Meeting*, Lillehammer, Norway, September 24–28, 2017.
- K. A. Gamble and J. D. Hales, “Preliminary modeling of accident tolerant fuel concepts under accident conditions,” in *TopFuel 2016 Conference Proceedings*, Boise, ID, September 11–16, 2016.
- F. Gleicher, J. Ortensi, M. DeHart, Y. Wang, S. Schunert, S. Novascone, J. Hales, R. Williamson, A. Slaughter, C. Permann, D. Andrs, and R. Martineau, “The application of Mammoth for a detailed tightly coupled fuel pin simulation with station blackout,” in *TopFuel 2016 Conference Proceedings*, Boise, ID, September 11–16, 2016.
- J. D. Hales and K. A. Gamble, “Multiscale modeling of accident tolerant fuels under the NEAMS ATF program,” in *2016 ANS Annual Meeting*, New Orleans, LA, June 12–16, 2016.
- , “Modeling accident tolerant fuel concepts,” in *Enlarged Halden Programme Group Meeting*, Oslo/Fornebu, Norway, May 8–13, 2016.
- A. Casagrande, B. W. Spencer, G. Pastore, S. R. Novascone, J. D. Hales, R. L. Williamson, and R. C. Martineau, “Determination of experimental fuel rod parameters using 3D modeling of PCMI with MPS defects,” in *Enlarged Halden Programme Group Meeting*, Oslo/Fornebu, Norway, May 8–13, 2016.

- R. L. Williamson, G. Pastore, S. R. Novascone, B. W. Spencer, and J. D. Hales, “Modelling of LOCA tests with the BISON fuel performance code,” in *Enlarged Halden Programme Group Meeting*, Oslo/Fornebu, Norway, May 8–13, 2016.
- G. Pastore, J. D. Hales, S. R. Novascone, B. W. Spencer, and R. L. Williamson, “Modelling of gadolinium fuel test IFA-681 using the BISON code,” in *Enlarged Halden Programme Group Meeting*, Oslo/Fornebu, Norway, May 8–13, 2016.
- J. D. Hales and K. A. Gamble, “Preliminary evaluation of FeCrAl cladding and U-Si fuel for accident tolerant fuel concepts,” in *TopFuel 2015 Conference Proceedings*, Zurich, Switzerland, September 13–17, 2015.
- S. M. Bragg-Sitton, B. J. Merrill, and J. Hales, “Evaluation of enhanced accident tolerant LWR fuels,” in *TopFuel 2015 Conference Proceedings*, Zurich, Switzerland, September 13–17, 2015.
- G. Pastore, S. R. Novascone, R. L. Williamson, J. D. Hales, B. W. Spencer, and D. S. Stafford, “Modelling of fuel behaviour during loss-of-cooling accidents using the BISON code,” in *TopFuel 2015 Conference Proceedings*, Zurich, Switzerland, September 13–17, 2015.
- R. J. Gardner, S. R. Novascone, D. M. Perez, R. L. Williamson, J. D. Hales, and W. Liu, “Improving the accuracy of PCMI simulations with more realistic geometry and material models,” in *TopFuel 2015 Conference Proceedings*, Zurich, Switzerland, September 13–17, 2015.
- W. Liu, R. Montgomery, C. Tomé, C. Stanek, and J. Hales, “VPSC implementation in BISON-CASL code for modeling large deformation problems,” in *ANS MC2015 – Joint International Conference on Mathematics and Computation (M&C), Supercomputing in Nuclear Applications (SNA) and the Monte Carlo (MC) Method*, Nashville, TN, April 19–23, 2015.
- J. D. Hales, P. G. Medvedev, S. R. Novascone, D. M. Perez, and R. L. Williamson, “Analysis of double-encapsulated fuel rods,” in *Enlarged Halden Programme Group Meeting*, Røros, Norway, September 7–12, 2014.
- G. Pastore, D. Pizzocri, J. D. Hales, S. R. Novascone, D. M. Perez, B. W. Spencer, R. L. Williamson, P. V. Uffelen, and L. Luzzi, “Modeling of transient fission gas behavior in oxide fuel and application to the BISON code,” in *Enlarged Halden Programme Group Meeting*, Røros, Norway, September 7–12, 2014.
- R. L. Williamson, J. D. Hales, S. R. Novascone, G. Pastore, D. M. Perez, B. W. Spencer, and R. C. Martineau, “Overview of the BISON multidimensional fuel performance code,” in *IAEA Technical Meeting: Modeling of Water-Cooled Fuel Including Design-Basis and Severe Accidents*, Chengdu, China, October 28–November 1, 2013.
- G. Pastore, J. D. Hales, S. R. Novascone, D. M. Perez, B. W. Spencer, and R. L. Williamson, “Analysis of fission gas release in LWR fuel using the BISON code,” in *2013 LWR Fuel Performance Meeting – TopFuel*, Charlotte, NC, September 15–19, 2013.

- W. Liu, J. Rashid, D. Sunderland, R. Montgomery, C. Stanek, B. Wirth, J. Hales, and R. Williamson, "Numerical method of modeling creep of zirconium-alloy cladding in a multi-physics fuel performance code," in *2013 LWR Fuel Performance Meeting – TopFuel*, Charlotte, NC, September 15–19, 2013.
- N. Capps, D. Sunderland, W. Liu, R. Montgomery, J. Hales, C. Stanek, and B. Wirth, "Verification and benchmarking of Peregrine against Halden fuel rod data and FALCON," in *2013 LWR Fuel Performance Meeting – TopFuel*, Charlotte, NC, September 15–19, 2013.
- J. D. Hales, D. M. Perez, R. L. Williamson, S. R. Novascone, B. W. Spencer, and G. Pastore, "Nuclear fuel modeling with BISON," in *Fuels & Materials Summer School on Principles of Fuel Behaviour Modelling and Practical Applications*. Halden, Norway: OECD Halden Reactor Project, August 26–29, 2013.
- J. D. Hales, M. R. Tonks, K. Chockalingam, D. M. Perez, S. R. Novascone, and B. W. Spencer, "Multiscale nuclear fuel analysis via asymptotic expansion homogenization," in *Transactions of SMiRT-22, I. A. for Structural Mechanics in Reactor Technology*, Ed., San Francisco, CA, August 18–23, 2013.
- S. R. Novascone, B. W. Spencer, R. L. Williamson, D. Andrs, J. D. Hales, and D. M. Perez, "The effects of thermomechanics coupling strategies in nuclear fuels performance simulations," in *Transactions of SMiRT-22, I. A. for Structural Mechanics in Reactor Technology*, Ed., San Francisco, CA, August 18–23, 2013.
- J. D. Hales, R. L. Williamson, S. R. Novascone, B. W. Spencer, D. M. Perez, and G. Pastore, "Computational challenges in modeling loss of coolant accidents," in *12th US National Congress on Computational Mechanics*, ser. USNCCM12, Raleigh, NC, July 22–25, 2013.
- G. Pastore, J. D. Hales, S. R. Novascone, D. M. Perez, B. W. Spencer, and R. L. Williamson, "Modeling of fission gas behavior in nuclear fuel applied to engineering scale analysis," in *12th US National Congress on Computational Mechanics*, ser. USNCCM12, Raleigh, NC, July 22–25, 2013.
- B. W. Spencer, J. D. Hales, S. R. Novascone, D. M. Perez, and R. L. Williamson, "Frictional contact in nuclear fuel simulations," in *12th US National Congress on Computational Mechanics*, ser. USNCCM12, Raleigh, NC, July 22–25, 2013.
- F. N. Gleicher, S. R. Novascone, B. W. Spencer, R. L. Williamson, R. C. Martineau, M. Rose, and T. Downar, "Coupling the core analysis program DeCART to the fuel performance program BISON," in *Proceedings of the International Conference on Mathematics and Computational Methods Applied to Nuclear Science and Engineering*, Sun Valley, Idaho, May 5-9, 2013.
- J. D. Hales, D. Andrs, and D. R. Gaston, "Algorithms for thermal and mechanical contact in nuclear fuel performance analysis," in *Proceedings of the International Conference on Mathematics and Computational Methods Applied to Nuclear Science and Engineering*, Sun Valley, Idaho, May 5-9, 2013.

- D. M. Perez, R. L. Williamson, S. R. Novascone, T. K. Larson, J. D. Hales, B. W. Spencer, and G. Pastore, "An evaluation of the nuclear fuel performance code BISON," in *Proceedings of the International Conference on Mathematics and Computational Methods Applied to Nuclear Science and Engineering*, Sun Valley, Idaho, May 5-9, 2013.
- S. R. Novascone, B. W. Spencer, D. Andrs, R. L. Williamson, J. D. Hales, and D. M. Perez, "Results from tight and loose coupled multiphysics in nuclear fuels performance simulations using BISON," in *Proceedings of the International Conference on Mathematics and Computational Methods Applied to Nuclear Science and Engineering*, Sun Valley, Idaho, May 5-9, 2013.
- L. P. Swiler, R. L. Williamson, and D. M. Perez, "Calibration of a fuel relocation model in BISON," in *Proceedings of the International Conference on Mathematics and Computational Methods Applied to Nuclear Science and Engineering*, Sun Valley, Idaho, May 5-9, 2013.
- J. D. Hales, D. M. Perez, R. L. Williamson, S. R. Novascone, B. W. Spencer, and R. C. Martineau, "Validation of the BISON 3D fuel performance code: Temperature comparisons for concentrically and eccentrically located fuel pellets," in *Enlarged Halden Programme Group Meeting: Proceedings of the Fuels and Materials Sessions*, vol. HPR-378. Storefjell Resort Hotel, Norway: OECD Halden Reactor Project, March 10–15, 2013.
- S. R. Novascone, J. D. Hales, B. W. Spencer, and R. L. Williamson, "Assessment of PCMI Simulation Using the Multidimensional Multiphysics BISON Fuel Performance Code," in *Proceedings of Top Fuel 2012*, Manchester, United Kingdom, September 2-6, 2012.
- B. W. Spencer, J. D. Hales, S. R. Novascone, and R. L. Williamson, "3D Simulation of Missing Pellet Surface Defects in Light Water Reactor Fuel Rods," in *Proceedings of Top Fuel 2012*, Manchester, United Kingdom, September 2-6, 2012.
- S. R. Novascone, R. L. Williamson, J. D. Hales, M. R. Tonks, D. R. Gaston, C. J. Permann, D. Andrs, and R. C. Martineau, "A Multidimensional and Multiphysics Approach to Nuclear Fuel Behavior Simulation," in *Proceedings of PHYSOR 2012*, A. N. Society, Ed., Knoxville, Tennessee, April 15-20, 2012.
- B. Wirth, D. Gaston, J. Hales, R. Martineau, R. Montgomery, Y. R. Rashid, and C. Stanek, "3-dimensional, high-resolution modeling of nuclear fuel performance: pellet clad interaction," in *TMS 2012*, Orlando, Florida, March 11-15, 2012.
- J. Hales, D. Andrs, D. Gaston, S. Novascone, C. Permann, M. Tonks, and R. Williamson, "Fully coupled, implicit, 3-d, multi-physics for analysis of nuclear fuel," in *11th US National Congress on Computational Mechanics*, ser. USNCCM11, Minneapolis, MN, 2011.
- D. Gaston, C. Permann, D. Andrs, J. Peterson, M. Tonks, J. Hales, R. Williamson, and L. Guo, "Massively parallel multiphysics simulation using an object-oriented framework," in *The Second Annual CAES Workshop on Modeling, Simulation and Visualization*, Boise, ID, Sep 8-9, 2011.

R. L. Williamson and D. A. Knoll, "Enhancing the ABAQUS thermomechanics code to simulate steady and transient fuel rod behavior," in *Proceedings of Top Fuel*, 2009, paper 2072.