Publication List

Brian MacKie-Mason

May 27, 2024

Journal Publications

1. **B. MacKie-Mason**, Y. Shao, A. Greenwood, and Z. Peng, "Supercomputing-Enabled First-Principles Analysis of Radio Wave Propagation in Urban Environments," *IEEE Transactions on Antennas and Propagation,* **66**, pp. 6606–6612 (2018). doi:10.1109/TAP.2018.2874674.

2. Z. Peng, R. Hiptmair, Y. Shao, **B. MacKie-Mason**, "Domain Decomposition Preconditioning for Surface Integral Equations in Solving Challenging Electromagnetic Scattering Problems," *IEEE Transactions on Antennas and Propagation,* **64**, pp. 210–223 (2016). doi:10.1109/TAP.2015.2500908.

3. **B. MacKie-Mason**, A. Greenwood, and Z. Peng, "Adaptive and Parallel Surface Integral Equation Solvers for Very Large-Scale Electromagnetic Modeling and Simulation (invited paper)," *Progress in Electromagnetics Research,* **154**, pp. 143–162 (2015). doi:10.2528/PIER15113001.

Conference Publications

1. Jon T. Kelley, **B. MacKie-Mason**, David A. Chamulak, Mark Martin, Kendall Crouch, Clifton C. Courtney, Ali E. Yilmaz, "Towards Quantifying the Effect of Material Uncertainty on RCS Predictions of Composite Targets," *IEEE International Conference on Wireless Information Technology and Systems (ICWITS) and Applied Computational Electromagnetics (ACES),* Orlando, FL, May 20–24, 2024.

2. Jon Kelley, Kurt Norris, **Brian MacKie-Mason**, Brody Barton, David Chamulak, Scott Schaeffer, Mark Martin, Kendall Crouch, Clifton Courtney, Ali Yilmaz, "Reproducible Measurements of "Fan Blades in a Pipe" CEM Benchmark", *45th Annual Meeting and Symposium of the Antenna Measurement Techniques Association (AMTA),* Seattle, WA, October 8–13, 2023.

3. **B. MacKie-Mason**, J. T. Kelley, K. A. Norris, S. Schaefer, M. Martin, S. Cox, C. C. Courtney, D. A. Chamulak, A. E. Yilmaz, "On the Sensitivity of RCS to Manufacturing Defects in as-Built Camera Boxes with Voids", *IEEE International Symposium on Antennas and Propagation & USNC/URSI National Radio Science Meeting,* Portland, OR, July 23–28, 2023. doi:https://doi.org/10.1109/USNC-URSI52151.2023.10238329.

4. J. T. Kelly, **B. MacKie-Mason**, K. A. Norris, B. Barton, D. A. Chamulak, S. Schaefer, M. Martin, S. Cox, C. C. Courtney, A. E. Yilmaz, "Using Camera Boxes to Build Reproducible CEM Benchmarks with Complex Ducts", *IEEE International Symposium on Antennas and Propagation & USNC/URSI National Radio Science Meeting,* Portland, OR, July 23–28, 2023. doi:https://doi.org/10.1109/USNC-URSI52151.2023.10237665.

5. A. Yilmaz, **B. MacKie-Mason**, S. Cox, C. Courtney and G. Burchuk, "On the Sensitivity of RCS to the Wall Conductivity of Highly-Conductive Structures with Voids", *IEEE International Symposium on Antennas and Propagation & USNC/URSI National Radio Science Meeting,* Denver, CO, July 10–15, 2022. doi:10.1109/AP-S/USNC-URSI47032.2022.9887308.

6. A. Yilmaz, E. Smith, S. Cox, **B. MacKie-Mason**, C. Courtney and G. Burchuk, "Camera Boxes: A Set of Complex Scattering Problems to Test EM Simulations and Measurements", *IEEE International Symposium on Antennas and Propagation & USNC/URSI National Radio Science Meeting,* Denver, CO, July 10–15, 2022. doi:10.1109/AP-S/USNC-URSI47032.2022.9887014.

7. A. Maicke, J. Kelley, **B. MacKie-Mason**, C. Courtney, S. Cox, D. Chamulak, G. Burchuk and A. Yilmaz, "A Benchmark Airplane Model with Ducts", *IEEE International Symposium on Antennas and Propagation & USNC/URSI National Radio Science Meeting,* Denver, CO, July 10–15, 2022. doi:10.1109/AP-S/USNC-URSI47032.2022.9887354.

8. S. Wang, **B. Mackie-Mason**, and Z. Peng, "Platform-Aware In-Situ Antenna and Metamaterial Analysis and Design," *International Review of Progress in Applied Computational Electromagnetics (ACES),* Miami, Florida, USA, April 14–18, 2019. (Best Student Paper Award). `https://bit.ly/2VuzVgy`.

9. **B. MacKie-Mason** and Z. Peng, "Towards Real-time In-Situ Antenna Analysis and Design on Platforms of 1000 Wavelengths", *IEEE International Symposium on Antennas and Propagation & USNC/URSI National Radio Science Meeting,* San Diego, CA, July 9–14, 2017. doi:10.1109/APUSNCURSINRSM.2017.8072714.

10. Z. Peng and **B. MacKie-Mason**, "High-Performance Surface Integral Equation Solvers Towards Extreme-Scale Electromagnetic Modeling and Simulation," *IEEE International Conference on Wireless Information Technology and Systems (ICWITS) and Applied Computational Electromagnetics (ACES),* Honolulu, HI, 22–26, March 2016. doi:10.1109/ROPACES.2016.7465365.

11. **B. MacKie-Mason** and Z. Peng, "Adaptive, Scalable Domain Decomposition Methods for Surface Integral Equations," *IEEE International Symposium on Antennas and Propagation & USNC/URSI National Radio Science Meeting,* Vancouver, B.C., July 19–25, 2015. doi:10.1109/APS.2015.7305220.

Contributed Abstracts

1. Aaron Scheinberg, **B. MacKie-Mason**, S. Ethier, G. Chen, S. Slattery, R. Bird, E. D'Azevedo, CS Chang, et. al., "XGC", *Preparing Applications for Aurora at the Exascale Computing Project Annual Meeting,* Houston, TX, U.S.A. February 3–7, 2020.

2. **B. MacKie-Mason** and XGC Team, "Early OpenMP Experience with Collision Kernel", *OpenMP BOF at the Exascale Computing Project Annual Meeting,* Houston, TX, U.S.A. February 3–7, 2020.

3. **B. MacKie-Mason**, P. Velesko, R. Hager, C.-S. Chang, and T.J. Williams, "Application Study of Gyrokinetic PIC codes on Intel KNL architecture", *IXPUG Annual Fall Conference,* Hillsboro, OR, U.S.A. September 25–28, 2018. `https://goo.gl/iLGnTv`.

4. **B. MacKie-Mason** and Z. Peng, "Towards a Real-Time Solution of Extreme-Scale Electromagnetic Problems", *National Radio Science Meeting,* Boulder, CO, U.S.A., January 4–7, 2017. `https://goo.gl/bK4wms`.

5. **B. MacKie-Mason** and Z. Peng, "High-fidelity, High-performance Integral Equation Solver for Time-Harmonic Maxwell's Equations", *IEEE International Symposium on Antennas and Propagation & USNC/URSI National Radio Science Meeting,* Fajardo, Puerto Rico, U.S.A., June 26–July 1, 2016. `https://goo.gl/fgmgvk`.

6. Z. Peng and **B. MacKie-Mason**, "Integral equation discontinuous Galerkin methods for time harmonic electromagnetic wave problems," *International Review of Progress in Applied Computational Electromagnetics (ACES),* Williamsburg, VA, March 22–26, 2015. `https://goo.gl/dkiiyX`.

Posters

1. E. D'Azevedo, A. Scheinberg, M. Shephard, P. Worley, S. Sreepathi, **B. MacKie-Mason**, T.J. Williams, and the SciDAC HBPS XGC Team, "Performance Enhancements of XGC", *2019 Scientific Discovery through Advanced Computing Principal Investigator (PI) Meeting,* July 16–18, 2019.

2. **B. MacKie-Mason** and XGC Team, "Performance Portability of XGC code at DOE supercomputing facilities", *DOE Performance, Portability and Productivity Annual Meeting,* Apr. 2–4, 2019. `https://bit.ly/2UHXMda`.

3. **B. MacKie-Mason**, P. Velesko, R. Hager, C.-S. Chang, and T.J. Williams, "Performance Optimization of the XGC code on KNL architecture", *Annual Meeting of the APS Division of Plasma Physics,* Nov. 5–9, 2018. `https://goo.gl/wirgSu`.

4. **B. MacKie-Mason**, Z. Peng, and C. Kung, "Extreme Fidelity Computational Electromagnetic Analysis in the Supercomputer Era", *The International Conference for High Performance Computing, Networking, Storage and Analysis,* Salt Lake City, Utah, U.S.A., November 13–18, 2016. `https://goo.gl/jeQSKR`.

5. **B. MacKie-Mason**, W. Tang, "Modeling of laser-induced field emission", *Air Force Research Lab Annual Scholar Presentation,* Albuquerque, NM, July 2013.

6. **B. MacKie-Mason**, N. Lockwood, W. Tang, "Development of single-walled nanotube fiber cathode diagnostics", *Air Force Research Lab Annual Scholar Presentation,* Albuquerque, NM, July 2012.

7. **B. MacKie-Mason**, A. Greenwood, N. Lockwood, "Automated Testing of ICEPIC", *Air Force Research Lab Annual Scholar Presentation,* Albuquerque, NM, July 2011.

Other

1. **B. MacKie-Mason** and XGC Team, "Porting XGC to Aurora", *A21 Apps Working Group Meeting,* Argonne National Laboratory, IL, U.S.A., April 19, 2019.

2. **B. MacKie-Mason**, "What Can KNL Do For You?", *CoPA Workshop on Deep-dive into XGC,* Princeton Plasma Physics Laboratory, NJ, U.S.A., Dec. 11–12, 2018. `https://bit.ly/2MH3OFT`.

3. **B. MacKie-Mason**, "What do I do?", *Argonne Computing Coffee & Code,* Argonne National Laboratory, IL, U.S.A., September 12, 2018. `https://goo.gl/AtWQSD`.

4. **B. MacKie-Mason** and Z. Peng, "Adaptive and parallel surface integral equation solvers for very large-scale electromagnetic modeling and simulation," *Electrical and Computer Engineering Student Paper Competition,* Albuquerque, NM, April 2016. `https://goo.gl/aK2KUn`.