

# DOMINIC MARCELLO

## Curriculum Vitae

Digital Media Center  
340 E Parker Blvd.  
Baton Rouge, Louisiana, 70803

email: dmarce504@gmail.com

### EDUCATION

- 2011 PhD, Louisiana State University, Department of Physics and Astronomy  
2000 BS, Louisiana State University, Department of Physics and Astronomy

### EMPLOYMENT

- 2018 – Research Scientist, Louisiana State University, Center for Computation & Technology  
2017 – 2018 Senior Post-Doctoral Researcher, Louisiana State University, Department of Physics & Astronomy  
2012 – 2017 Post-Doctoral Researcher, Louisiana State University, a joint appointment with the Center for Computation & Technology and the Department of Physics & Astronomy  
2002 – 2004 Astronomer, United States Naval Observatory, Flagstaff Station

### PUBLICATIONS

#### Refereed Publications

- 2019 Daiß, G., Amini, P. Biddiscombe, J., Diehl, P., Frank, J., Huck, K., Kaiser, H., **Marcello, D.**, Pfander, D., Pflüger, D., “From Piz Daint to the Stars: Simulation of Stellar Mergers using High-Level Abstractions”, *SC ‘19: Proceedings of The International Conference for High Performance Computing, Networking, Storage, and Analysis*
- 2019 Lauer, A., Chatzopoulos, E., Clayton, G.C., Frank, J., and **Marcello, D.C.**, “Evolving R Coronae Borealis Stars with MESA”, *Monthly Notices of the Royal Astronomical Society*, 488:438
- 2019 Heller, T., Adelstein Lelbach, B., Huck, K.A., Biddiscombe, J., Grubel, P., Koniges, A.E., Kretz, M., **Marcello, D.**, Pfander, D., Serio, A., Frank, J. Clayton, G.C., Pflüger, D., Eder, D., and Kaiser, H., “Harnessing Billions of Tasks for a Scalable Portable Hydrodynamic Simulation of the Merger of Two Stars”, *The International Journal of High Performance Computing Applications*
- 2018 Kadam, K., Motl, P.M., **Marcello, D.C.**, Frank, J., and Clayton, G.C., “Numerical Simulations of Mass Transfer in Binaries using a Bipolytropic Equation of State”, *Monthly Notices of the Royal Astronomical Society*, 481:3683
- 2018 **Marcello, D.C.**, Kadam, K., Clayton, G.C., Frank, J, Kaiser, H., and Motl, P.M., “Introducing Octo-tiger/HPX: Simulating Interacting Binaries with Adaptive Mesh Refinement and the Fast Multipole Method”, *Proceedings of Science*, (APCS2016)055

- 2018 Pfander, D., Daiß, G., **Marcello, D.**, and Kaiser, H., “Accelerating Octo-Tiger: Stellar Mergers on Intel Knights Landing with HPX”, *Proceedings of the International Workshop on OpenCL*, art. 19
- 2018 Staff, J., Wiggins, B., **Marcello, D.C.**, Motl, P.M., Even, W., Fryer, C.L., Raskin, C., Clayton, G.C., and Frank, J. “The Role of Dredge-Up in Double White Dwarf Mergers”, *The Astronomical Journal*, 862
- 2017 **Marcello, D.C.** “A Very Fast And Angular Momentum Conserving Tree Code”, *The Astronomical Journal*, 154:92
- 2016 Kadam, K., Clayton, G.C., Motl, P.M., **Marcello, D.C.**, and Frank, J., “A Numerical Method for Generating Rapidly Rotating Bipolytropic Structures in Equilibrium”, *Monthly Notices of the Royal Astronomical Society*, 462:2237
- 2016 De Angelis, V., and **Marcello, D.C.**, “Wilf’s Conjecture”, *The American Mathematical Monthly*, 123:557
- 2015 Montiel, E.J., Clayton, G.C., **Marcello, D.C.**, and Lockman, F.J., “What Is the Shell Around R Coronae Borealis?”, *The Astronomical Journal*, 150:14
- 2014 Byerly, Z.D., Adelstein-Lelbach, B., Tohline, J.E., and **Marcello, D.C.**, “A Hybrid Advection Scheme for Conserving Angular Momentum on a Refined Cartesian Mesh”, *The Astrophysical Journal Supplement*, 212:23
- 2012 **Marcello, D.C.**, and Tohline, J.E., “A Numerical Method for Studying Super-Eddington Mass Transfer in Double White Dwarf Binaries”, *The Astrophysical Journal Supplement*, 199:35

### Conference Proceedings

- 2018 Staff, J., Wiggins, B.K., Marcello, D.M., Motl, P.M., Clayton, G.C., “RCB Stars From Double Degenerate White Dwarf Mergers”, *American Astronomical Society Meeting Abstracts*, 231:145.04
- 2017 Kadam, K., Clayton, G.C., Motl, P.M., **Marcello, D.C.**, and Frank, J., “Numerical Simulations of Close and Contact Binary Systems Having Bipolytropic Equation of State”, *American Astronomical Society Meeting Abstracts*, 229:433.14
- 2016 Motl, P.M., Staff, J.E., and **Marcello, D.C.**, “Simulations of Double White Dwarf Mergers”, *APS Meeting Abstracts*, K13.007
- 2015 Kadam, K., Clayton, G.C., Frank, J., **Marcello, D.C.**, Motl, P.M., and Staff, J.E., “Hydrodynamic Simulations of Contact Binaries”, *Astronomical Society Meeting Abstracts*, 225:345.26
- 2015 Clayton, G.C., Montiel, E.J., **Marcello, D.C.**, and Lockman, F.J., “What is the Origin of the Shell Around R Coronae Borealis?”, *Astronomical Society Meeting Abstracts*, 225:344.06
- 2014 Kadam, K., Clayton, G.C., Frank, J., Tohline, J.E., Staff, J.E., Motl, P.M., and **Marcello, D.C.**, “Simulating Contact Binaries”, *Astronomical Society Meeting Abstracts*, 224:219.12
- 2012 **Marcello, D.C.**, Tohline, J.E., and Motl, P.M., “Radiation Hydrodynamics with FLOW-ER”, *Astronomical Society Meeting Abstracts*, 211:162.24

### GRANTS

- 2019 1,000,060 service units from the Louisiana Optical Network Initiative. Grant: lrn\_07
- 2019 1,000,060 service units from the Louisiana Optical Network Initiative. Grant: lrn\_08
- 2020 4,000,000 service units from the Louisiana Optical Network Initiative. Grant: lrn\_10

## **AWARDS**

- 2019 SciVis 2019 Best Contest Award presented to Schatz, K., Müller, C., Gralka P., Heinemann, M., Straub, A., Shulz, C., Braun, M., Rau, T., Becher, M., Diehl, P., **Marcello, D.**, Frank, J., Müller, T., Frey, S., Reina, G., Weiskopf, D., Ertl, T. for Visual Analysis of Structure Formation in Cosmic Evolution

## **CONFERENCES AND WORKSHOPS ATTENDED**

- 2019 SC19: The International Conference for High Performance Computing Networking, Storage, and Analysis, Denver, Colorado
- 2019 EuroHack19: GPU Programming Hackathon, Lugano, Switzerland
- 2019 The Theory-Software Translation Workshop, New Orleans, Louisiana
- 2018 ASTRONUM 2018, Panama City Beach, Florida
- 2017 Current Challenges on the Physics of White Dwarf Stars, Santa Fe, New Mexico
- 2016 Accretion Processes in Cosmic Sources, Saint Petersburg, Russia
- 2016 SC16: The International Conference for High Performance Computing Networking, Storage, and Analysis, Salt Lake City, Utah
- 2016 Fourth International Workshop on AM CVn Stars, Dallas, Texas
- 2015 SC15: The International Conference for High Performance Computing Networking, Storage, and Analysis, Austin, Texas
- 2014 SC14: The International Conference for High Performance Computing Networking, Storage, and Analysis, New Orleans, Louisiana
- 2014 Stellar Tango at the Rockies, Lake Louise, Alberta, Canada
- 2014 SC13: The International Conference for High Performance Computing Networking, Storage, and Analysis, Denver, Colorado
- 2013 Third Workshop for the Software Institute for Methodologies and Abstractions for Codes, Boston, Massachusetts
- 2012 Third International Workshop on AM CVn Stars, Coventry, United Kingdom
- 2011 Louisiana Optical Network Initiative High Performance Computing Workshop, New Orleans, Louisiana
- 2009 Prospects in Theoretical Physics: Computational Astrophysics, Princeton, New Jersey
- 2008 Computational Astrophysics Consortium Meeting, Menlo Park, California
- 2007 Effective Use of Multi-core Technology: Towards Peta-scale Applications Using Abe, Campaign, Illinois
- 2007 American Astronomical Society's 211<sup>th</sup> Meeting, Austin, Texas
- 2007 First Meeting of the Third Coast Astronomical Society, Baton Rouge, Louisiana

## **TEACHING EXPERIENCE**

- 2004 – 2005 Teaching Assistant, Introductory Physics Laboratory (4 semesters)
- 2006 Teaching Assistant, Astronomy Laboratory (1 semester)

## **RESEARCH EXPERIENCE**

2006 – 2011 Research Assistant, Louisiana State University, Department of Physics and Astronomy,  
under the direction of Joel Tohline

2011 Research Assistant, Xavier University of Louisiana, Computer Science Department,  
under the direction of Andrea Edwards