

# STELLA S. R. OFFNER

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## PROFESSIONAL PREPARATION

2012-Present    **Hubble Postdoctoral Fellow**, Yale University  
2009-2012    **National Science Foundation Astronomy & Astrophysics Postdoctoral Fellow**, Harvard University  
2009    **Ph.D. Physics**, University of California at Berkeley  
          *Investigations of Low-Mass Star Formation: Simulations and Simulated Observations*  
          Advisers: Christopher McKee and Richard Klein  
2005    **M.A. Physics**, University of California at Berkeley  
2003    **B.A. Mathematics and Physics with Honors**, summa cum laude, Wellesley College

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## FELLOWSHIPS & AWARDS

2012    **Hubble Postdoctoral Fellowship**  
2012    **Canadian Institute for Theoretical Astrophysics Postdoctoral Fellowship** (declined)  
2012    **University of California President's Postdoctoral Fellowship Finalist**  
2009    **National Science Foundation Astronomy & Astrophysics Postdoctoral Fellowship**  
2007    **Kavli Institute of Theoretical Physics Graduate Fellowship**, Santa Barbara  
2003    **Department of Education Research Fellowship**, U. C. Berkeley  
2003    **Wellesley College Trustee Scholar, Phi Beta Kappa, Sigma Xi, Phyllis Flemming Prize for Outstanding Physics Major**, Wellesley College

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## REFEREED PUBLICATIONS <sup>1</sup>

24. **Offner**, S. S. R., Bisbas T. G., Bell, T. A. & Viti, S. "An Alternative Accurate Tracer of Molecular Clouds: The  $X_{\text{Cl}}$ -Factor." 2013, *MNRAS*, submitted.
23. **Offner**, S. S. R. & Arce, H. G. "Investigations of Protostellar Outflow Launching and Gas Entrainment: Hydrodynamic Simulations and Molecular Emission." 2013, *ApJ*, submitted.
22. \*\*Mairs, S., Johnstone, D., **Offner**, S. S. R. & Schnee, S. "Synthetic Observations of the Evolution of Starless Cores in a Molecular Cloud Simulation: Comparisons with JCMT Data and Predictions for ALMA." 2013, *ApJ*, submitted.
21. \*\*Yeremi, M., \*\*Flynn, M., **Offner**, S. S. R., Loeppky, J., & Rosolowsky, R. "Comparing Simulated Emission from Molecular Clouds Using Experimental Design." 2013, *ApJ*, submitted.
20. Kirk, H., **Offner**, S. S. R. & \*Redmond, K. "The Formation and Evolution of Small Star Clusters." 2013, *MNRAS*, submitted.
19. \*\*Beaumont, C., **Offner**, S. S. R., Shetty, R., Goodman, A., & Glover, S. "Quantifying Projection Effects in Molecular Cloud Simulations," 2013, *ApJ*, accepted.
18. Miettinen, O. & **Offner**, S. S. R. "Dynamics, CO Depletion, and Deuterium Fractionation in the Dense Condensations of the Fragmented Prestellar Core Orion B9-SMM 6," 2013, *A&A*, 555, 41.
17. **Offner**, S. S. R., Bisbas, T. G., Viti, S., & Bell, T. "Modeling the Atomic-to-Molecular Transition and Chemistry of Turbulent, Star-Forming Clouds," 2013, *ApJ*, 770, 49.

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<sup>1</sup>\* indicates an undergraduate student co-author. \*\* indicates a graduate student co-author.

16. Miettinen, O. & **Offner**, S. S. R. “SABOCA 350- $\mu$ m and LABOCA 870  $\mu$ m Dust Continuum Imaging of IRAS 05399-0121: Mapping the Dust Properties of a Pre- and Protostellar Core System,” 2013, *A&A*, 553, 88.
15. **Offner**, S. S. R., Robitaille, T., \*\*Hansen, C., McKee, C. F. & Klein, R. I., 2012, “Observing Simulated Protostars with Outflows: How accurate are Protostellar Properties Inferred from SEDS?” *ApJ*, 753, 28.
14. **Offner**, S. S. R., \*Capodilupo, J., Schnee, S. & Goodman, A. A., 2012, “Observing Turbulent Fragmentation in Simulations: Predictions for CARMA and ALMA,” *MNRAS Letters*, 420, 530.
13. **Offner**, S. S. R., \*Lee, E. J., Goodman, A. A., & Arce, H. 2011 “Radiation-Hydrodynamic Simulations of Protostellar Outflows: Synthetic Observations and Data Comparisons,” *ApJ*, 743, 91.
12. **Offner**, S. S. R. & McKee, C. F. 2011, “The Protostellar Luminosity Function,” *ApJ*, 736, 53.
11. Hosokawa, T., **Offner**, S. S. R., & Krumholz, M. R. 2011, “On the Reliability of Stellar Ages and Age Spreads Inferred from Pre-Main Sequence Evolutionary Models,” *ApJ*, 738, 140.
10. **Offner**, S. S. R., \*\*Kratte, K. M., Matzner, C. D., Krumholz, M. R., & Klein, R. I. 2010, “The Formation of Low-Mass Binary Star Systems Via Turbulent Fragmentation,” *ApJ*, 725, 1485.
9. McKee, C. F., & **Offner**, S. S. R. 2010, “The Protostellar Mass Function,” *ApJ*, 716, 167.
8. **Offner**, S. S. R., \*\*Hansen, C. E., & Krumholz, M. R. 2009, “Stellar Kinematics of Young Clusters in Turbulent Hydrodynamic Simulations,” *ApJL*, 704, 124.
7. **Offner**, S. S. R., Klein, R. I., McKee, C. F., & Krumholz, M. R. 2009, “The Effects of Radiative Feedback on Low-Mass Star Formation,” *ApJ*, 703, 131.
6. Krumholz, M. R., McKee, C. F., Klein, R. I., **Offner**, S. S. R., & Cunningham, A. J. 2009, “The Formation of Massive Star Systems by Accretion,” *Science*, 323, 754.
5. **Offner**, S. S. R. & Krumholz, M. R. 2009, “The Shapes of Molecular Cloud Cores in Simulations and Observations,” *ApJ*, 693, 914.
4. **Offner**, S. S. R., Klein, R. I., & McKee, C. F. 2008, “Driven and Decaying Turbulence Simulations of Low-Mass Star Formation: from Clumps to Cores to Protostars,” *ApJ*, 686, 1174.
3. **Offner**, S. S. R., Krumholz, M. K., Klein, R. I., & McKee, C. F. 2008, “The Kinematics of Molecular Cloud Cores in the Presence of Driven and Decaying Turbulence: Comparisons with Observations,” *AJ*, 136, 4040.
2. Shestakov, A. I., & **Offner**, S. S. R. 2007, “A Multigroup Diffusion Solver Using Pseudo Transient Continuation for a Radiation-Hydrodynamic Code With Patch-based AMR,” *JCP*, 227, 2154.
1. Dassanayake, U. M., **Offner**, S. S. R., & Hu, Y. 2004, “Critical Role of Flow-Modified Permittivity in Electrorheology: Model and Computer Simulation,” *Phys. Rev. E*, 69, 2.

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## CONFERENCE PROCEEDINGS

6. **Offner**, S. S. R., Clark, P., Bastian, N., Bate, M., Hopkins, P., Hennebelle, P., and Whitworth, A. 2013, “The Origin and Universality of the Stellar Initial Mass Function,” *Proceedings of Protostars and Planets VI*, in review.
5. Dunham, M., Allen, L., Evans, N. J., Fischer, W. J., Kryukov, E., Megeath, S. T., Myers, P. C. **Offner**, S. S. R., Poteet, C. A., Stutz, A. M., Tobin, J. J., and Vorobyov, E. 2013, “The Evolution of Protostars: Insights from Ten Years of Infrared Surveys with Spitzer and Herschel,” *Proceedings of Protostars and Planets VI*, in review.
4. **Offner**, S. S. R. 2012, “Dust Continuum Observations of Protostars: Constraining Properties with Simulations,” *Proceedings of The Labyrinth of Star Formation*, in press.
3. **Offner**, S. S. R. 2011, “The Effects of Radiation Feedback on Early Fragmentation and Multiplicity,” *Proceedings of IAU Symposium 270: Computational Star Formation*, 231.
2. McKee, C. F., & **Offner**, S. S. R. 2011, “The Luminosity Problem: Testing Theories of Star Formation” *Proceedings of IAU Symposium 270: Computational Star Formation*, 73.

1. Shestakov, A. I, Harte, J. A., Bolstad, J. H. & **Offner**, S. S. R. 2006, “A Multigroup Radiation Diffusion Test Problem: Comparison of Code Results with Analytic Solution,” *Nuclear Explosives Code Developers Conference Proceeding*.

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## TEACHING & OUTREACH

|                         |                                                                                                    |                             |
|-------------------------|----------------------------------------------------------------------------------------------------|-----------------------------|
| Summer 2013             | <i>Star and Planet Formation</i> , UC-HiPACC International School on AstroComputing, UC Santa Cruz | Instructor                  |
| Spring 2013             | <i>Physical Processes in Astronomy</i> , Yale University                                           | Guest lecturer              |
| Spring 2013             | <i>Interstellar Medium &amp; Star Formation</i> , Harvard University                               | Guest lecturer              |
| Spring 2012             | <i>Interstellar Medium</i> , Yale University                                                       | Guest lecturer              |
| Summer 2011             | <i>Principles of Physics</i> , Harvard University Summer School                                    | Co-Instructor               |
| Summer 2011             | <i>Fundamentals of Contemporary Astronomy</i> , Harvard University Summer School                   | Co-Instructor               |
| Spring 2011             | <i>Interstellar Medium &amp; Star Formation</i> , Harvard University                               | Guest lecturer              |
| Spring 2010-present     | WorldWide Telescope (WWT) Ambassadors Program, Cambridge, MA                                       | Ambassador                  |
| Summer 2010             | <i>Fundamentals of Contemporary Astronomy</i> , Harvard University Summer School                   | Co-Instructor               |
| Fall 2009-Spring 2012   | Women-In-Science Chats, Harvard-Smithsonian Center for Astrophysics                                | Lead Organizer              |
| Fall 2009-Spring 2010   | Citizens Schools at Edwards Middle School, Charlestown, MA                                         | Mentor Scientist            |
| Fall 2008               | Expanding Your Horizons, Berkeley, CA                                                              |                             |
| Summer 2006-Spring 2007 | <i>Algebra</i> , Patten University/Prison University Project, San Quentin, CA                      | Instructor                  |
| Summer 2005             | <i>Math 50</i> , Patten University/Prison University Project, San Quentin, CA                      | Instructor                  |
| Fall 2003               | <i>Electricity &amp; Magnetism</i> , UC Berkeley                                                   | Graduate Student Instructor |
| Fall 2002-Spring 2003   | Physics Help-room Tutor, Wellesley College                                                         | Teaching Assistant          |

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## SELECTED COMPUTING GRANTS

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|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2013 | <b>XSEDE</b> , “Modeling the Chemical Distributions of Turbulent Star Forming Clouds,” PI, 100,000 CPU hours.                                                                         |
| 2012 | <b>XSEDE</b> , “Winds, Bubbles & Explosions: The Impact of Stars on Molecular Clouds,” PI, 420,000 CPU hours.                                                                         |
| 2011 | <b>XSEDE</b> , “Characterizing and Observing Molecular Cloud Structure in Turbulent, Self-Gravitating Simulations,” PI, 112,000 CPU hours.                                            |
| 2010 | <b>Teragrid Startup</b> , “Multigroup Radiative Transfer Method Testing and Application to the Problem of Star Formation,” PI, 100,000 CPU hours.                                     |
| 2009 | <b>LRAC</b> , “Progress Towards A Comprehensive Theory of Star Formation: From Brown Dwarfs to High Mass Stars and On To Giant Molecular Clouds,” Co-I, 1.6 Million CPU hours.        |
| 2008 | <b>ERCAP</b> , NERSC, “The Effects of Radiation Transfer on the Formation of Low Mass Stars,” Co-I, 1 Million CPU hours.                                                              |
| 2007 | <b>LRAC</b> , SDSC, “Progress Towards a Comprehensive Theory of Star Formation – From Brown Dwarfs to High Mass Stars and on to Giant Molecular Clouds,” Co-I, 1.1 Million CPU hours. |

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| 2005 | <b>LRAC</b> , SDSC, “Progress Towards a Comprehensive Theory of Star Formation – From Low to High Mass Stars and on to Giant Molecular Clouds,” Co-I, 0.7 Million CPU hours. |
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## OBSERVING AWARDS

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| 2013 | <b>ALMA Cycle 1</b> , “Outflow Entrainment and Core Dispersal in HH46/47”, Co-I, highest priority, 21.3 hrs                       |
| 2013 | <b>ALMA Cycle 1</b> , “A Survey of Dense Cores in Chamaeleon I”, Co-I, highest priority, 2 hrs                                    |
| 2013 | <b>Keck 2</b> , “Low-mass Protostars in the Massive Filament G34.43+00.24: When and Where is the IMF Established?”, Co-I, 1 night |
| 2012 | <b>SABOCA</b> , “A search for substructure in a low-mass filamentary dense core”, Co-I, 8 hrs                                     |
| 2011 | <b>Green Bank Telescope</b> , “Is there a sharp temperature or density profile in B5?”, Co-I, 8 hrs                               |

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## SELECTED INVITED TALKS

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| 2013 | CfA Colloquium, Harvard-Smithsonian CfA; Invited Review, “Regulated Star Formation in Molecular Gas” Conference; Astronomy Colloquium, Columbia University; Astronomy Colloquium, University of Maryland; Astronomy Colloquium, University of Florida         |
| 2012 | Astronomy Colloquium, UMASS Amherst; Astronomy Colloquium, University of Illinois; Keynote Talk, “The Formation and Evolution of Clusters” Conference; Invited Research Presentation, “Star Formation and the Interstellar Medium: 35 Years Later” Conference |
| 2011 | Astronomy Colloquium, Wesleyan University; Astronomy Colloquium, University of Manchester, U.K.; Physics Colloquium, Wellesley College                                                                                                                        |
| 2010 | Public Talk, New Bedford Ocean Explorium, MA; Physics Colloquium, UMASS Dartmouth; ITC Seminar, Harvard-Smithsonian Center for Astrophysics                                                                                                                   |

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## SERVICE

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| 2013         | Scientific Organizing Committee, <i>The Olympian Symposium on Star Formation</i> , Greece                                             |
| 2012         | Scientific Organizing Committee, <i>Is the Stellar Mass Function Universal?</i> , Lorentz Center, Netherlands                         |
| Spring 2012  | Institute for Theory and Computation (ITC) Pizza Lunch Talk Organizer, Cambridge, MA                                                  |
| 2010-2012    | ITC Colloquium Committee Member, Cambridge, MA                                                                                        |
| 2010, 2011   | ITC Academic Job Search Panel Organizer, Cambridge, MA                                                                                |
| 2009-present | Reviewer: <i>MNRAS</i> , <i>ApJ</i> , <i>ApJL</i> , <i>JQRST</i> , <i>Science</i>                                                     |
| Fall 2007    | Wiki Organizer for the Kavli Institute for Theoretical Physics <i>Star Formation Through Cosmic Time Workshop</i> , Santa Barbara, CA |
| Fall 2006    | Graduate Student Representative on the Physics Department Faculty Search Committee, UC Berkeley, CA                                   |

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