

Sarah J. Vigeland

CONTACT INFORMATION	University of Wisconsin Milwaukee Department of Physics P. O. Box 413 Milwaukee, WI 53201 USA vigeland@uwm.edu http://people.uwm.edu/vigeland/	
EDUCATION	Ph.D., Physics , Massachusetts Institute of Technology, Cambridge, MA, USA	May 2012
	B.A., Physics , Carleton College, Northfield, MN, USA <i>Summa cum laude</i>	Jun 2006
EMPLOYMENT	Assistant Professor of Physics , UWM	Aug 2019–present
	NSF Physics Frontier Center Postdoctoral Fellow , UWM	Aug 2015–Aug 2019
	NASA Postdoctoral Program Fellow , Jet Propulsion Laboratory	Oct 2012–Sep 2014
	Graduate Research Assistant , MIT	Sep 2006–May 2012
	Undergraduate Research Assistant , Carleton College	2004–2006
	Teaching and Lab Assistant , Carleton College	2004–2006
HONORS AND AWARDS	Whiteman Graduate Fellow , MIT	2006–2007
	Phi Beta Kappa , Carleton College	2006
	Sigma Xi , Carleton College	2006
	Mike Ewers Award in Astrophysics , Carleton College	2005
	Dean’s List , Carleton College	2003–2005
GRANTS AND PROPOSALS	Co-I (PI Kevin Stovall) on Green Bank Observatory Proposal, <i>Mass Measurements for Four Millisecond Pulsars Using Relativistic Shapiro Delay</i> , 30 hrs PI on Gemini Proposal, <i>PSR J1640+2224: A challenge to binary evolution models</i> , 3.8 hrs	
TEACHING EXPERIENCE	Assistant Professor , UWM PHYSICS 711 Theoretical Physics-Dynamics	Fall 2019
	Lecturer , IPTA Student Workshop 1-hour lesson about the Solar System ephemeris (lecture and activity)	Jun 2018
	Lecturer , UWM ASTRON 103 Survey of Astronomy	Fall 2017
	Teaching Assistant , MIT 8.287 Observational Techniques of Optical Astronomy	Fall 2010
	8.01 Physics I	Fall 2009
	8.962 General Relativity	Spring 2009
	8.02 Physics II	Spring 2008

MENTORING	Graduate students	
	Kristina Iso, UWM	2017–2019
	Undergraduate students	
	Jacob Turner, UWM	Fall 2017
PROFESSIONAL AFFILIATIONS AND COLLABORATIONS	American Astronomical Society	2011–present
	American Physical Society	2009–present
	LISA Consortium (Associate Member)	2018–present
	NANOGrav Collaboration	2013–present
	Equity & Climate Committee	2018–2019
	IPTA Collaboration	2013–present
SERVICE AND OUTREACH	Conference Organizer	
	Chair of the Scientific Organizing Committee, Spring 2019 NANOGrav Meeting	Mar 2019
	Scientific Organizing Committee, Fall 2018 NANOGrav Meeting	Oct 2018
	Scientific Organizing Committee, Spring 2018 NANOGrav Meeting	Mar 2018
	Co-Organizer, 2013 Pasadena Postdoc Retreat	Apr 2013
	CGCA Seminar Organizer	Spring 2016, Fall 2016
	MIT Graduate Women in Physics	2006–2012
	Co-Chair	2007–2012
	Organizer of the Undergraduate Mentorship Program	2006–2007
	Journal referee for <i>Physical Review D</i> , <i>Physical Review Letters</i> , <i>Astrophysical Journal</i>	
Selection Committee for the 2018 GWIC and Braccini Thesis Prizes		
Outreach		
Member of Coffeeshop Astrophysics	2015–2019	
Outreach group made up of members of the CGCA at UWM		
Public talks given once a month at a local coffeeshop		
Invited talk at the Milwaukee Astronomical Society	Feb 2016	
REFEREED PUBLICATIONS	22. K. Aggarwal <i>et al.</i> (The NANOGrav collaboration, 61 co-authors with corresponding author S. J. Vigeland), “The NANOGrav 11-Year Data Set: Limits on gravitational waves from individual supermassive black hole binaries,” <i>Astrophysical Journal</i> 880 , 2 (2019) [arXiv:1812.11585].	
	21. L. O’Beirne, N. J. Cornish, S. J. Vigeland , and S. R. Taylor, “Constraining alternative polarizations of continuous gravitational waves using pulsar timing arrays,” <i>Physical Review D</i> 99 , 12 (2019) [arXiv:1904.02744].	
	20. J. S. Deneva <i>et al.</i> (48 co-authors including S. J. Vigeland), “Large High-Precision X-ray Timing of Three Millisecond Pulsars with <i>NICER</i> : Stability Estimates and Comparison with Radio,” <i>Astrophysical Journal</i> 874 , 2 (2019) [arXiv:1902.07130].	
	19. M. T. Lam <i>et al.</i> (28 co-authors including S. J. Vigeland), “The NANOGrav 12.5-Year Data Set: The Frequency Dependence of Pulse Jitter in Precision Millisecond Pulsars,” <i>Astrophysical Journal</i> 872 , 2 (2019) [arXiv:1809.03058].	

18. K. Stovall *et al.* (33 co-authors including **S. J. Vigeland**), “PSR J2234+0611: A New Laboratory for Stellar Evolution,” *Astrophysical Journal* **870**, 2 (2019) [arXiv:1809.05064].
17. **S. J. Vigeland**, K. Islo, S. R. Taylor, and J. A. Ellis, “Noise-marginalized optimal statistic: A robust hybrid frequentist-Bayesian statistic for the stochastic gravitational-wave background in pulsar timing arrays,” *Physical Review D* **98**, 044003 (2018) [arXiv:1805.12188].
16. M. T. Lam *et al.* (37 co-authors including **S. J. Vigeland**), “A Second Chromatic Timing Event of Interstellar Origin toward PSR J1713+0747,” *Astrophysical Journal* **861**, 2 (2018) [arXiv:1712.03651].
15. Z. Arzoumanian *et al.* (The NANOGrav collaboration, 61 co-authors including **S. Vigeland**), “The NANOGrav 11-Year Data Set: Constraints on the stochastic gravitational wave background,” *Astrophysical Journal* **859**, 1 (2018) [arXiv:1801.02617].
14. Z. Arzoumanian *et al.* (The NANOGrav collaboration, 56 co-authors including **S. Vigeland**), “The NANOGrav 11-Year Data Set: High-precision timing of 45 millisecond pulsars,” *Astrophysical Journal Supplement* **235**, 2 (2018) [arXiv:1801.01837].
13. **S. J. Vigeland**, A. T. Deller, D. L. Kaplan, A. G. Istrate, B. Stappers, and T. Tauris, “Reconciling the optical and radio observations of the binary millisecond pulsar PSR J1640+2224,” *Astrophysical Journal* **855**, 2 (2018) [arXiv:1711.11063].
12. **S. J. Vigeland** and X. Siemens, “Supermassive Black Hole Binary Environments: Effects on the Scaling Laws and Time to Detection for the Stochastic Background,” *Physical Review D* **94**, 123003 (2016) [arXiv:1609.03656].
11. A. T. Deller, **S. J. Vigeland**, D. L. Kaplan, W. M. Goss, W. F. Brisken, S. Chatterjee, J. M. Cordes, G. H. Janssen, T. J. W. Lazio, L. Petrov, B. W. Stappers, and A. Lyne, “Microarcsecond VLBI pulsar astrometry with PSRPI I. Two binary millisecond pulsars with white dwarf companions,” *Astrophysical Journal* **828**, 8 (2016) [arXiv:1604.02367].
10. U. Ruangsri, **S. J. Vigeland**, and S. A. Hughes, “Gyroscopes orbiting black holes: A frequency-domain approach to precession and spin-curvature coupling for spinning bodies on generic Kerr orbits,” *Physical Review D* **94**, 044008 (2016) [arXiv:1512.00376].
9. **S. J. Vigeland** and M. Vallisneri, “Bayesian inference for pulsar timing models,” *Monthly Notices of the Royal Astronomical Society*, **440**, 1446 (2014) [arXiv:1310.2606].
8. **S. Vigeland**, N. Yunes, and L. C. Stein, “Bumpy black holes in alternate theories of gravity,” *Physical Review D* **83**, 104027 (2011) [arXiv:1102.3706].
7. **S. J. Vigeland**, “Multipole moments of bumpy black holes,” *Physical Review D* **82**, 104041 (2010) [arXiv:1008.1278].
6. **S. J. Vigeland** and S. A. Hughes, “Spacetime and orbits of bumpy black holes,” *Physical Review D* **81**, 024030 (2010) [arXiv:0911.1756].
5. B. Abbott *et al.* (LIGO Scientific Collaboration, 446 co-authors including **S. Vigeland**), “Einstein@Home search for periodic gravitational waves in LIGO S4 data,” *Physical Review D* **79**, 022001 (2009) [arXiv:0804.1747].
4. B. Abbott *et al.* (LIGO Scientific Collaboration, 410 co-authors including **S. Vigeland**), “Searching for a stochastic background of gravitational waves with LIGO,” *Astrophysical Journal* **659**, 918 (2007) [arXiv:astro-ph/0608606].
3. S. Johnston, G. Hobbs, **S. Vigeland**, M. Kramer, J. Weisberg, and A. Lyne, “Evidence for alignment of the rotation and velocity vectors in pulsars,” *Monthly Notices of the Royal Astronomical Society* **364**, 1397 (2005) [arXiv:astro-ph/0510260].
2. R. Umstätter, N. Christensen, M. Hendry, R. Meyer, V. Simha, J. Veitch, **S. Vigeland**, and G. Woan, “LISA source confusion: identification and characterization of signals,” *Classical and Quantum Gravity* **22** (18), S901 (2005) [arXiv:gr-qc/0503121].
1. R. Umstätter, N. Christensen, M. Hendry, R. Meyer, V. Simha, J. Veitch, **S. Vigeland**, and G. Woan, “Bayesian modeling of source confusion in LISA data,” *Physical Review D* **72**, 022001 (2005) [arXiv:gr-qc/0506055].

NON-REFEREED
PUBLICATIONS

2. A. Brazier, S. Chatterjee, T. Cohen, J. M. Cordes, M. E. DeCesar, P. B. Demorest, J. S. Hazboun, M. T. Lam, R. S. Lynch, M. A. McLaughlin, S. M. Ransom, X. Siemens, S. R. Taylor, and **S. J. Vigeland** for the NANOGrav Collaboration, “The NANOGrav Program for Gravitational Waves and Fundamental Physics,” submitted to the Astro2020 Decadal Survey (2019) [[arXiv:1908.05356](#)].
1. S. R. Taylor, S. Burke-Spolaor, P. T. Baker, M. Charisi, K. Islo, L. Z. Kelley, D. R. Madison, J. Simon, and **S. J. Vigeland**, “Supermassive Black-hole Demographics & Environments with Pulsar Timing Arrays,” submitted to the Astro2020 Decadal Survey (2019) [[arXiv:1903.08183](#)].

INVITED TALKS

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| 24. | Merging Visions Conference, Kavli Institute for Theoretical Physics | Jun 2019 |
| 23. | IPTA Meeting, Pune, India | Jun 2019 |
| 22. | Physics Colloquium, UWM | Mar 2019 |
| 21. | Physics Colloquium, University of Mississippi | Feb 2019 |
| 20. | Minnesota Institute for Astrophysics Colloquium, University of Minnesota | Feb 2019 |
| 19. | Physics Colloquium, University of Vermont | Jan 2019 |
| 18. | Physics Colloquium, University of Virginia | Jan 2019 |
| 17. | Physics & Astronomy Colloquium, Montclair State University | Dec 2018 |
| 16. | GWPAW, College Park, MD, USA | Dec 2018 |
| 15. | Astronomy Lunch Talk, University of Wisconsin Madison | Oct 2018 |
| 14. | Astronomy Colloquium, Haverford College | Oct 2018 |
| 13. | Astronomy Colloquium, University of Illinois Urbana-Champaign | Sep 2018 |
| 12. | CGCA Seminar, UWM | Sep 2018 |
| 11. | PASCOS 2018, Cleveland, OH, USA | Jun 2018 |
| 10. | Research Seminar, University of Washington Bothell | May 2018 |
| 9. | TAPIR Seminar, California Institute of Technology | Dec 2017 |
| 8. | CGCA Seminar, UWM | Dec 2017 |
| 7. | Astrophysics Colloquium, University of Minnesota | Sep 2017 |
| 6. | 2017 WAVES Meeting, Minneapolis, MN, USA | May 2017 |
| 5. | What Physicists Do Seminar, Carleton College | Apr 2016 |
| 4. | CGCA Seminar, UWM | Oct 2015 |
| 3. | Astrophysics Lunch Seminar, Cornell University | Nov 2013 |
| 2. | LIGO Seminar, California Institute of Technology | Sep 2012 |
| 1. | Sigma Xi induction banquet, Carleton College | Feb 2006 |

CONTRIBUTED
TALKS AND POSTERS

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| 22. | APS April Meeting, Denver, CO, USA | Apr 2019 |
| 21. | 233th AAS Meeting (poster), Seattle, WA, USA | Jan 2019 |
| 20. | GWPAW (poster), College Park, MD, USA | Dec 2018 |
| 19. | NANOGrav Fall Meeting, Green Bank, WV, USA | Oct 2018 |
| 18. | 12th LISA Symposium, Chicago, IL, USA | Jul 2018 |
| 17. | IPTA Meeting, Albuquerque, NM, USA | Jun 2018 |
| 16. | APS April Meeting, Columbus, Ohio, USA | Apr 2018 |
| 15. | NANOGrav Spring Meeting, Charlottesville, VA, USA | Mar 2018 |
| 14. | Midwest Relativity Meeting, Ann Arbor, MI, USA | Sep 2017 |
| 13. | Amaldi12, Pasadena, CA, USA | Jul 2017 |

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12. APS April Meeting, Washington, DC, USA Jan 2017
 11. 229th AAS Meeting, Grapevine, TX, USA Jan 2017
 10. GWPAAW, Hyannis, MA, USA Jun 2016
 9. NANOGrav Spring Meeting, Pasadena, CA, USA May 2016
 8. 223rd AAS Meeting (poster), Washington, DC, USA Jan 2014
 7. NANOGrav Spring Meeting, Green Bank, WV, USA May 2013
 6. Pasadena Postdoc Retreat, Lake Arrowhead, CA, USA Apr 2013
 5. Eastern Gravity Meeting, Princeton, NJ, USA Jun 2011
 4. The Ins and Outs of Black Holes Meeting, Annapolis, MD, USA Nov 2010
 3. APS April Meeting, Washington, DC, USA Feb 2010
 2. Eastern Gravity Meeting, Rochester, NY, USA Jun 2009
 1. APS April Meeting, Denver, CO, USA May 2009