

# MATTHEW SIEBERT - CURRICULUM VITAE

304 King Street, Santa Cruz, CA, 95060

603-321-5469 ♦ msiebert@ucsc.edu

## PHD INFORMATION

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**Affiliation:** University of California Santa Cruz

PhD Topic: Type Ia Supernova Spectroscopy

PhD Advisor: Ryan Foley

## EDUCATION

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**Cornell University, Ithaca, NY**

*August 2012 - June 2016*

Bachelor of Science: Engineering Physics

## AWARDS AND FELLOWSHIPS

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UC Santa Cruz Department of Astronomy Whitford Prize

*2018*

National Science Foundation Graduate Research Fellowship

*2018*

## PUBLICATIONS

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### First Author Publications (3)

*“A Possible Distance Bias for Type Ia Supernovae with Different Ejecta Velocities”*

**M. R. Siebert**, R. J. Foley, D. O. Jones, and K. W. Davis.

Monthly Notices of the Royal Astronomical Society. 2020. [arXiv:2002.09490]

*“Investigating the Diversity of Type Ia Supernova Spectra with the Open-Source Relational Database Kaepora”*

**M. R. Siebert**, R. J. Foley, D. O. Jones, R. Angulo, K. Davis, A. Duarte, E. Strasburger, M. Conlon, N. Kazmi, R. Nishimoto, M. Schubert, L. Sun, and R. Tipples.

Monthly Notices of the Royal Astronomical Society, Volume 486, Issue 4, p.5785-5808. 2019. [arXiv:1905.02204]

*“The Unprecedented Properties of the First Electromagnetic Counterpart to a Gravitational-wave Source”*

**Siebert, M. R.**; Foley, R. J.; Drout, M. R.; Kilpatrick, C. D.; Shappee, B. J.; Coulter, D. A.; Kasen, D.; Madore, B. F.; Murguia-Berthier, A.; Pan, Y. -C.; Piro, A. L.; Prochaska, J. X.; Ramirez-Ruiz, E.; Rest, A.; Contreras, C.; Morrell, N.; Rojas-Bravo, C.; Simon, J. D.

ApJL, Volume 848, Issue 2, article id. L26, 6 pp. 2017. [arXiv:1710.05440]

### Co-authored Publications (16)

*“The Foundation Supernova Survey: Measuring Cosmological Parameters with Supernovae from a Single Telescope”*

Jones, D. O.; Scolnic, D. M.; Foley, R. J.; Rest, A.; Kessler, R.; Challis, P. M.; Chambers, K. C.; Coulter, D. A.; Dettman, K. G.; Foley, M. M.; Huber, M. E.; Jha, S. W.; Johnson, E.; Kilpatrick, C. D.; Kirshner, R. P.; Manuel, J.; Narayan, G.; Pan, Y. -C.; Riess, A. G.; Schultz, A. S. B.; **Siebert, M. R.** et al. (30 authors)

ApJ, Volume 881, Issue 1, article id. 19, 23 pp. 2019. [arXiv:1811.09286]

*“Discovery of Highly Blueshifted Broad Balmer and Metastable Helium Absorption Lines in a Tidal Disruption Event”*

Hung, T.; Cenko, S. B.; Roth, Nathaniel; Gezari, S.; Veilleux, S.; van Velzen, Sjoert; Gaskell, C. Martin; Foley, Ryan J.; Blagorodnova, N.; Yan, Lin; Graham, M. J.; Brown, J. S.; **Siebert, M. R.** et al. (28 authors)

ApJ, Volume 879, Issue 2, article id. 119, 17 pp. 2019. [arXiv:1903.05637]

*“SN 2017ens: The Metamorphosis of a Luminous Broadlined Type Ic Supernova into an SN IIn”*

Chen, T. -W.; Inserra, C.; Fraser, M.; Moriya, T. J.; Schady, P.; Schweyer, T.; Filippenko, A. V.; Perley, D. A.; Ruiter, A. J.; Seitenzahl, I.; Sollerman, J.; Taddia, F.; Anderson, J. P.; Foley, R. J.; ... **Siebert, M. R.** et al. (49 authors)

ApJL, Volume 867, Issue 2, article id. L31, 8 pp. 2018. [arXiv:1808.04382]

*“Should Type Ia Supernova Distances Be Corrected for Their Local Environments?”*

Jones, D. O.; Riess, A. G.; Scolnic, D. M.; Pan, Y. -C.; Johnson, E.; Coulter, D. A.; Dettman, K. G.; Foley, M. M.; Foley, R. J.; Huber, M. E.; Jha, S. W.; Kilpatrick, C. D.; Kirshner, R. P.; Rest, A.; Schultz, A. S. B.; **Siebert, M. R.**

ApJ, Volume 867, Issue 2, article id. 108, 14 pp. 2018. [arXiv:1805.05911]

*“Three Hypervelocity White Dwarfs in Gaia DR2: Evidence for Dynamically Driven Double degenerate Double-detonation Type Ia Supernovae”*

Shen, Ken J.; Boubert, Douglas; Gnsicke, Boris T.; Jha, Saurabh W.; Andrews, Jennifer E.; Chomiuk, Laura; Foley, Ryan J.; Fraser, Morgan; Gromadzki, Mariusz; Guillochon, James; Kotze, Marissa M.; Maguire, Kate; **Siebert, Matthew R.** et al. (26 authors)

ApJ, Volume 865, Issue 1, article id. 15, 14 pp. 2018. [arXiv:1804.11163]

*“SN 2016esw: a luminous Type II supernova observed within the first day after the explosion”*

de Jaeger, Thomas; Galbany, Llus; Gutierrez, Claudia P.; Filippenko, Alexei V.; Zheng, WeiKang; Brink, Thomas G.; Foley, Ryan J.; Snchez, Sebastian F.; Channa, Sanyum; de Kouchkovsky, Maxime; Halevi, Goni; Kilpatrick, Charles D.; Kumar, Sahana; Molloy, Jeffrey; Pan, Yen-Chen; Ross, Timothy W.; Shivvers, Isaac; **Siebert, Matthew R.** et al. (21 authors)

Monthly Notices of the Royal Astronomical Society, Volume 478, Issue 3, p.3776-3792. 2018. [arXiv:1905.02204]

*“The Foundation Supernova Survey: motivation, design, implementation, and first data release”*

Foley, Ryan J.; Scolnic, Daniel; Rest, Armin; Jha, S. W.; Pan, Y. -C.; Riess, A. G.; Challis, P.; Chambers, K. C.; Coulter, D. A.; Dettman, K. G.; Foley, M. M.; Fox, O. D.; Huber, M. E.; Jones, D. O.; Kilpatrick, C. D.; Kirshner, R. P.; Schultz, A. S. B.; **Siebert, M. R.** et al. (28 authors)

Monthly Notices of the Royal Astronomical Society, Volume 475, Issue 1, p.193-219. 2018. [arXiv:1711.02474]

*“Electromagnetic evidence that SSS17a is the result of a binary neutron star merger”*

Kilpatrick, C. D.; Foley, R. J.; Kasen, D.; Murguia-Berthier, A.; Ramirez-Ruiz, E.; Coulter, D. A.; Drout, M. R.; Piro, A. L.; Shappee, B. J.; Boutsia, K.; Contreras, C.; Di Mille, F.; Madore, B. F.; Morrell, N.; Pan, Y. -C.; Prochaska, J. X.; Rest, A.; Rojas-Bravo, C.; **Siebert, M. R.**; Simon, J. D. Ulloa, N.

Science, Volume 358, Issue 6370, pp. 1583-1587. 2017. [arXiv:1710.05434]

*“Early spectra of the gravitational wave source GW170817: Evolution of a neutron star merger”*

Shappee, B. J.; Simon, J. D.; Drout, M. R.; Piro, A. L.; Morrell, N.; Prieto, J. L.; Kasen, D.; Holoien, T. W. -S.; Kollmeier, J. A.; Kelson, D. D.; Coulter, D. A.; Foley, R. J.; Kilpatrick, C. D.; **Siebert, M. R.** et al. (36 authors)

Science, Volume 358, Issue 6370, pp. 1574-1578. 2017. [arXiv:1710.05432]

*“Light curves of the neutron star merger GW170817/SSS17a: Implications for r-process nucleosynthesis”*

Drout, M. R.; Piro, A. L.; Shappee, B. J.; Kilpatrick, C. D.; Simon, J. D.; Contreras, C.; Coulter, D. A.; Foley, R. J.; **Siebert, M. R.** et al. (44 authors)

Science, Volume 358, Issue 6370, pp. 1570-1574. Page 3. 2017. [arXiv:1710.05443]

*“Swope Supernova Survey 2017a (SSS17a), the optical counterpart to a gravitational wave source”*

Coulter, D. A.; Foley, R. J.; Kilpatrick, C. D.; Drout, M. R.; Piro, A. L.; Shappee, B. J.; **Siebert, M. R.**; Simon, J. D.; Ulloa, N.; Kasen, D.; Madore, B. F.; Murguia-Berthier, A.; Pan, Y. -C.; Prochaska, J. X.; Ramirez-Ruiz, E.; Rest, A.; Rojas-Bravo, C.

Science, Volume 358, Issue 6370, pp. 1556-1558. 2017. [arXiv:1710.05452]

*“A gravitational-wave standard siren measurement of the Hubble constant”*

Abbott, B. P.; ... **Siebert, M. R.** et al. (1313 authors)

Nature, Volume 551, Issue 7678, pp. 85-88. 2017. [arXiv:1710.05835]

*“A Neutron Star Binary Merger Model for GW170817/GRB 170817A/SSS17a”*

Murguia-Berthier, A.; Ramirez-Ruiz, E.; Kilpatrick, C. D.; Foley, R. J.; Kasen, D.; Lee, W. H.; Piro, A. L.; Coulter, D. A.; Drout, M. R.; Madore, B. F.; Shappee, B. J.; Pan, Y. -C.; Prochaska, J. X.; Rest, A.; Rojas-Bravo, C.; **Siebert, M. R.**; Simon, J. D.

ApJL, Volume 848, Issue 2, article id. L34, 8 pp. 2017. [arXiv:1710.05453]

*“The Old Host-galaxy Environment of SSS17a, the First Electromagnetic Counterpart to a Gravitational-wave Source”*

Pan, Y. -C.; Kilpatrick, C. D.; Simon, J. D.; Xhakaj, E.; Boutsia, K.; Coulter, D. A.; Drout, M. R.; Foley, R. J.; Kasen, D.; Morrell, N.; Murguia-Berthier, A.; Osip, D.; Piro, A. L.; Prochaska, J. X.; Ramirez-Ruiz, E.; Rest, A.; Rojas-Bravo, C.; Shappee, B. J.; **Siebert, M. R.**

ApJL, Volume 848, Issue 2, article id. L30, 7 pp. 2017. [arXiv:1710.05439]

*“Multi-messenger Observations of a Binary Neutron Star Merger”*

Abbott, B. P.; ... **Siebert, M. R.** et al. (3677 authors)

ApJL, Volume 848, Issue 2, article id. L12, 59 pp. 2017. [arXiv:1710.05833]

*“On the Progenitor of the Type IIb Supernova 2016gkg”*

Kilpatrick, Charles D.; Foley, Ryan J.; Abramson, Louis E.; Pan, Yen-Chen; Lu, Cicero-Xinyu; Williams, Peter; Treu, Tommaso; **Siebert, Matthew R.**; Fassnacht, Christopher D.; Max, Claire E.

Monthly Notices of the Royal Astronomical Society, Volume 465, Issue 4, p.4650-4657. 2017. [arXiv:1610.04587]

## Unrefereed Publications

*“Gravity and Light: Combining Gravitational Wave and Electromagnetic Observations in the 2020s”*

Foley, R. J.; Alexander, K. D.; Andreoni, I.; Arcavi, I.; Auchettl, K.; Barnes, J.; Baym, G.; Bellm, E. C.; Beloborodov, A. M.; Blagorodnova, N.; ... **Siebert, M. R.** et al. (113 authors)

White Paper. 2019. [arXiv:1903.04553]

Astronomer’s Telegrams (21 first authored, 51 co-authored)

## STUDENTS MENTORED

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Erika Strasburger 2019-present

Rodrigo Angulo 2018-present

Kyle Davis 2018-present

Andres Duarte 2017-2018

## OBSERVING EXPERIENCE

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Keck Optical Spectroscopy/Adaptive Optics Imaging

Shane (Lick) Optical Spectroscopy

SOAR Optical Spectroscopy (Goodman)

KPNO Mayall Optical Spectroscopy (KOSMOS)

Nickel (Lick) Direct Imaging

George H. Herbig Observational Astronomy Workshop. Lick Observatory, Mt. Hamilton, CA. Shane and Nickel.

## PRESENTATIONS

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### Talks

Conference - Progenitors of Type Ia Supernovae, Lijiang, China. *Using a Relational Database to Investigate Spectral Diversity in a Cosmological Sample*. August 2019.

FLASH Talk, Department of Astronomy, University of Arizona. *Investigating the Diversity of Type Ia Supernova Observations with a Relational Database*. August 2018.

FLASH Talk, Department of Astronomy and Astrophysics, UC Santa Cruz. *Familiar and Exotic Events in the Current Transient Landscape*. April 2018.

### Posters

F.O.E. Fifty-One Erg Supernova Conference. Corvallis, OR. *A Relational Database for Type Ia Supernova Observations*. June 2017.

## OTHER RESEARCH EXPERIENCE

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### MIT Haystack Observatory

A New Software User Interface for the Upgraded Haystack 37-meter Radio Telescope June 2015 - August 2015

## REFERENCES

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Ryan Foley: foley@ucsc.edu (University of California Santa Cruz, 831-459-2835)

James Lloyd: james.lloyd@cornell.edu (Cornell University, 607-255-4083)