

Wolfgang E. Kerzendorf

Education

- 2002 – 2006 **Vordiplom**, *Ruprecht Karls Universität Heidelberg*, Heidelberg, DE.
2007 – 2011 **PhD**, *ANU Research School of Astronomy and Astrophysics*, Weston Creek, AU.

Experience

- 2011 – 2014 **Postdoctoral Fellow**, *University of Toronto*, Toronto, CA.
2014 – now **ESO Fellow**, *European Southern Observatory*, Garching, DE.

Scholarships & Awards

- 2010 **Best Film**, *'Starcatchers' in the ANU Science Video Competition*, Australian National University, <http://y2u.be/mzkV5ZAUjiA>.
2007–2011 **RSAA Top-Up Scholarship**, *PhD scholarship*, Mt Stromlo Observatory.
2017 **Semifinalist Techfest**, *AR/VR astronomy education experience*, Munich, Germany, <https://goo.gl/8hYsGa>.

Professional Service Activities [selected]

- 2014–present **Member of the Data Science Group**, *ESO*.
2012–2016 **Lead of the Astropy spectrum utilities package**.
2010–2011 **Time Allocation Committee**, *Mount Stromlo Observatory*.
2010–2011 **Member of Astronomy Data Archive Committee**, *Mount Stromlo Observatory*.
2009 **LOC for Murchison Widefield Array Meeting**, *Mount Stromlo Observatory*.
2007–2011 **Member of the Student Public Outreach group**, *Mount Stromlo Observatory*.

Professional Development

- 2016 **Project Management**, *Tiba*.
2010 **Media and communication training for scientists**, *Econnect Communication*.
2007 **Science Communication Graduate Course**, *Australian National University*.

Talks [selected]

- 2017 **TARDIS - a radiative transfer code, an open source community, and an interdisciplinary collaboration [INVITED TALK]**, *EWASS 2017*, Prague, Czech Republic.
2017 **Does Cas A host a surviving companion star? [INVITED PANEL LEAD]**, *CSI: Princeton – A Definitive Investigation of the Core-Collapse Supernova Cassiopeia A*, Princeton, USA.
2016 **Calibrating and analyzing astronomical - new techniques**, *Challenges in statistical inference*, Garching, Germany.
2016 **New methods and algorithms for supernovae [INVITED REVIEW]**, *The Physics of Supernovae*, Garching, Germany.
2016 **Surviving companions of type Ia supernovae [INVITED REVIEW]**, *Stars on the Run*, Bamberg, Germany.

*European Southern Observatory - Karl-Schwarzschild-Straße 2
85748 Garching bei München, Germany*

- 2016 **Surviving companions of Supernovae [INVITED REVIEW]**, *Supernova Remnants: An Odyssey in Space after Stellar Death*, Chania, Greece.
- 2015 **TARDIS - fast modular supernova spectral synthesis**, *Python in Astronomy*, Lorentz Center - Leiden, Netherlands.

Supervisory Roles [selected]

- 2013 – now **10 Students from Summer of Code projects**, *Working remotely on TARDIS for 3 months*, PhD & undergraduate.
Europe, US, and Asia
- 2016 – 2017 **Stefan Lietzau**, *Exploring supernova spectra through machine learning*, Master, Max-Planck-Institute of Astrophysics.
Germany
- 2014 – 2015 **Vytautas Jančiauskas**, *Fitting Type Ia spectra with differential evolution algorithms*, PhD, Vilnius University.
Lithuania
- 2014 – 2015 **Aoife Boyle**, *Helium in the spectra of Type Ia supernovae*, Master, Queen's University Belfast.
United Kingdom
- 2012 **Adam Suban-Loewen**, *Optimizing compute time for supernova radiative transfer*, Undergraduate, University of Toronto.
Canada
- 2012 **Pegah Salbi**, *Analyzing and calibrating Arctic telescope data*, Undergraduate, University of Toronto.
Canada
- 2009 **Natalia Shaw**, *Galaxy dynamics*, Highschool, Australian National University.
Australia

Reviewer activities

I have reviewed papers for *Astrophysical Journal*, *Monthly Notices of the Royal Astronomical Society* and *Astronomy & Astrophysics*

Major Collaborations

- 2011 – now **TARDIS collaboration**, *PI Kerzendorf*, Leading the group and liaising between the disciplines.
- 2011 – now **Astropy collaboration**, Contributions to spectral analysis package and NDDATA.
- 2014 – now **UCLA Galactic Center Group**, *PI Ghez*, Expert on Stellar Abundance measurements.
- 2013 – now **West African International Summerschool**, *PI Strubbe*, Instructor & Mentor.
- 2017 – now **ePessto collaboration**, *PI Smartt*, Faint & fast transient group.

Member of professional societies

I am currently a member of the “European Astronomical Society” and was a past member of the “Canadian Astronomical Society (CASCA)” as well as the “Astronomical Society of Australia”.

Listings only include proposals that I led or made major contributions to.

Observing

Year	Instrument	Title	Time	Role
2009	VLT FLAMES 083.D-0805(A)	The progenitor of SN 1006	13h	PI
2009	SSO 2.3m WIFES	Searching the Kepler supernova remnant for the Donor Star	6 nights	PI
2011	Gemini GNIRS GN-2010B-SV-145	Searching for Type Ia progenitors in SN1572	3.7h	PI
2012	VLT NACO 090.D-0112(A)	V445 Puppis - A unique opportunity to study helium novae	2h	Col
2012	Gemini GMOS G2-2012B-Q-49	Supernova companions	24h	PI
2013	HST STIS GO13432	To be or not to be the progenitor: The question about Tycho-B	2 orbits	PI
2013	VLT SINFONI 092.D-0434(A)	V445 Puppis - A unique opportunity to study helium novae	4h	Col
2013	Gemini GMOS & NIRI GN-2014A-Q-24	SN2011fe at late times	14.1h	PI
2014	HST WFC3/ACS GO13824	SN 2011fe - tackling the Type Ia progenitor puzzle through extremely late time photometry	7 orbits	PI
2015	Gemini GNIRS GN2015A-FT3	Late time Near Infrared spectroscopy of SN2014J	16 hrs	Col
2016	VLT FLAMES 097.D-0880	The progenitor of the Type Ia supernova SN 185	6 hrs	PI
2017	Keck NIRC2	The surviving companion of Cas A	1/2 night	PI (access through Tuan Do)
2017	DECAM Blanco telescope	White dwarf survivors SN1006	1 hour	PI (access through Armin Rest)

Computing (total > 2 mio CPU h)

Year	Cluster	Description	CPU hours	Role
2015	C2PAP - LRZ cluster	Exploring Type Ia supernovae through mass spectral fitting	400 000	PI
2016	C2PAP - LRZ cluster	Exploring Type Ia supernovae through mass spectral fitting (contin.)	700 000	PI
2016	LRZ AstroLab initiative	Speeding up radiative transfer calculation	1/2 Person Month	PI
2017	C2PAP - LRZ cluster	Exploring Type Ia supernovae through mass spectral fitting (contin.)	450 000	PI

Grants (total 72k USD) - HST grants not listed

Year	Funding Scheme	Description	Amount	Role
2013	ESA Summer of Code in Space	one student for three months working on AstroPy/specutils	4000 Euro	PI
2013	Google Summer of Code	two students for three months working on AstroPy	10 000 USD	Col and mentor
2014	Google Summer of Code	one students for three months working on TARDIS	5500 USD	PI and Mentor
2015	Google Summer of Code	three students for three months working on TARDIS	18 000 USD	PI and Mentor
2016	Google Summer of Code	three students for three months working on TARDIS	18 000 USD	PI and Mentor
2016	ESA Summer of Code in Space	one student for three months working TARDIS	4000 Euro	PI
2017	Google Summer of Code	two students for three months working on TARDIS	11 000 USD	PI and Mentor

Software contributions

Most contributions publicly available in 21 repositories¹ on github.com written in a variety of languages². One of my major contributions are to ASTROPY³ which is a framework for data reduction and analysis in python. It has 145 contributors and represents roughly 100 000 lines of code⁴. I co-lead the NDData package within this framework and am the lead for the affiliated SPECUTILS subpackage that is committed to providing spectral support for ASTROPY.

My other main contribution is leading the TARDIS⁵ radiative transfer code. This code currently has 40 contributors and more than 20 000 lines of code(with documentation)⁶. The development is done by a collection of astrophysicists, statisticians and computer scientists.

¹ <http://github.com/wkerzendorf> ² <http://coderstats.net/github/wkerzendorf/> ³ <http://github.com/astropy/astropy>
⁴ <https://www.openhub.net/p/astropy> ⁵ <http://github.com/tardis-sn/tardis> ⁶ <https://www.openhub.net/p/tardis-sn>

I have received 2583 (h-index 17) citations in the last five years. Publication 20 is in the field of computer science and digital libraries. Publication 25 is in the field of statistics.

List of refereed Publications

- [1] **Kerzendorf, W. E.**, Schmidt, B. P., Asplund, M., Nomoto, K., Podsiadlowski, P., Frebel, A., Fesen, R. A., & Yong, D. 2009, *ApJ*, 701, 1665, “*Subaru High-Resolution Spectroscopy of Star G in the Tycho Supernova Remnant*” ([ADS link](#))
- [2] Tanaka, M., Mazzali, P. A., Stanishev, V., Maurer, I., **Kerzendorf, W. E.**, & Nomoto, K. 2011, *MNRAS*, 410, 1725, “*Abundance stratification in Type Ia supernovae - III. The normal SN 2003du*” ([ADS link](#))
- [3] **Kerzendorf, W. E.** 2011, PhD thesis, Australian National University, Research School of Astronomy & Astrophysics ([ADS link](#))
- [4] Harris, G. L. H., Gómez, M., Harris, W. E., Johnston, K., Kazemzadeh, F., **Kerzendorf, W.**, Geisler, D., & Woodley, K. A. 2012, *AJ*, 143, 84, “*Eight Hundred New Candidates for Globular Clusters in NGC 5128 (Centaurus A)*” ([ADS link](#))
- [5] **Kerzendorf, W. E.**, Schmidt, B. P., Laird, J. B., Podsiadlowski, P., & Bessell, M. S. 2012, *ApJ*, 759, 7, “*Hunting for the Progenitor of SN 1006: High-resolution Spectroscopic Search with the FLAMES Instrument*” ([ADS link](#))
- [6] Liu, Z.-W., Pakmor, R., Röpké, F. K., Edelmann, P., Hillebrandt, W., **Kerzendorf, W. E.**, Wang, B., & Han, Z. W. 2013, *A&A*, 554, A109, “*Rotation of surviving companion stars after type Ia supernova explosions in the WD+MS scenario*” ([ADS link](#))
- [7] Law, N. M., Carlberg, R., Salbi, P., Ngan, W.-H. W., Ahmadi, A., Steinbring, E., Murowinski, R., Sivanandam, S., & **Kerzendorf, W.** 2013, *AJ*, 145, 58, “*Exoplanets from the Arctic: The First Wide-field Survey at 80degN*” ([ADS link](#))
- [8] Astropy Collaboration, Robitaille, T. P., Tollerud, E. J., Greenfield, P., Droettboom, M., Bray, E., Aldcroft, T., Davis, M., Ginsburg, A., Price-Whelan, A. M., **Kerzendorf, W. E.**, Conley, A., Crighton, N., Barbary, K., Muna, D., Ferguson, H., Grollier, F., Parikh, M. M., Nair, P. H., Unther, H. M., Deil, C., Woillez, J., Conseil, S., Kramer, R., Turner, J. E. H., Singer, L., Fox, R., Weaver, B. A., Zabalza, V., Edwards, Z. I., Azalee Bostroem, K., Burke, D. J., Casey, A. R., Crawford, S. M., Dencheva, N., Ely, J., Jenness, T., Labrie, K., Lim, P. L., Pierfederici, F., Pontzen, A., Ptak, A., Refsdal, B., Servillat, M., & Streicher, O. 2013, *A&A*, 558, A33, “*Astropy: A community Python package for astronomy*” ([ADS link](#))
- [9] **Kerzendorf, W. E.**, Yong, D., Schmidt, B. P., Simon, J. D., Jeffery, C. S., Anderson, J., Podsiadlowski, P., Gal-Yam, A., Silverman, J. M., Filippenko, A. V., Nomoto, K., Murphy, S. J., Bessell, M. S., Venn, K. A., & Foley, R. J. 2013, *ApJ*, 774, 99, “*A High-resolution Spectroscopic Search for the Remaining Donor for Tycho’s Supernova*” ([ADS link](#))
- [10] **Kerzendorf, W. E.**, Taubenberger, S., Seitzzahl, I. R., & Ruitter, A. J. 2014, *ApJ*, 796, L26, “*Very Late Photometry of SN 2011fe*” ([ADS link](#))
- [11] **Kerzendorf, W. E.**, Childress, M., Scharwächter, J., Do, T., & Schmidt, B. P. 2014, *ApJ*, 782, 27, “*A Reconnaissance of the Possible Donor Stars to the Kepler Supernova*” ([ADS link](#))
- [12] **Kerzendorf, W. E.**, & Sim, S. A. 2014, *MNRAS*, 440, 387, “*A spectral synthesis code for rapid modelling of supernovae*” ([ADS link](#))
- [13] Do, T., **Kerzendorf, W.**, Winsor, N., Støstad, M., Morris, M. R., Lu, J. R., & Ghez, A. M. 2015, *ApJ*, 809, 143, “*Discovery of Low-metallicity Stars in the Central Parsec of the Milky Way*” ([ADS link](#))

- [14] Jeffery, C. S., Ahmad, A., Naslim, N., & **Kerzendorf, W.** 2015, MNRAS, 446, 1889, “*Radial-velocity measurements of the pulsating zirconium star: LS IV-14deg116*” ([ADS link](#))
- [15] Taubenberger, S., Elias-Rosa, N., **Kerzendorf, W. E.**, Hachinger, S., Spyromilio, J., Fransson, C., Kromer, M., Ruiter, A. J., Seitzzahl, I. R., Benetti, S., Cappellaro, E., Pastorello, A., Turatto, M., & Marchetti, A. 2015, MNRAS, 448, L48, “*Spectroscopy of the Type Ia supernova 2011fe past 1000 d*” ([ADS link](#))
- [16] Cabrera-Ziri, I., Niederhofer, F., Bastian, N., Rejkuba, M., Balbinot, E., **Kerzendorf, W. E.**, Larsen, S. S., Mackey, A. D., Dalessandro, E., Mucciarelli, A., Charbonnel, C., Hilker, M., Gieles, M., & Hénault-Brunet, V. 2016, MNRAS, 459, 4218, “*No evidence for younger stellar generations within the intermediate-age massive clusters NGC 1783, NGC 1806 and NGC 411*” ([ADS link](#))
- [17] **Kerzendorf, W. E.**, McCully, C., Taubenberger, S., Jerkstrand, A., Seitzzahl, I., Ruiter, A. J., Spyromilio, J., Long, K. S., & Fransson, C. 2017, MNRAS, 472, 2534, “*Extremely late photometry of the nearby SN 2011fe*” ([ADS link](#))
- [18] Feldmeier-Krause, A., **Kerzendorf, W.**, Neumayer, N., Schödel, R., Nogueras-Lara, F., Do, T., de Zeeuw, P. T., & Kuntschner, H. 2017, MNRAS, 464, 194, “*KMOS view of the Galactic Centre II. Metallicity distribution of late-type stars*” ([ADS link](#))
- [19] Dimitriadis, G., Sullivan, M., **Kerzendorf, W.**, Ruiter, A. J., Seitzzahl, I. R., Taubenberger, S., Doran, G. B., Gal-Yam, A., Laher, R. R., Maguire, K., Nugent, P., Ofek, E. O., & Surace, J. 2017, MNRAS, 468, 3798, “*The late-time light curve of the Type Ia supernova SN 2011fe*” ([ADS link](#))
- [20] **Kerzendorf, W. E.** 2017, ArXiv e-prints, “*Knowledge discovery through text-based similarity searches for astronomy literature*” ([ADS link](#))
- [21] Smartt, S. J., Chen, T. W., Jerkstrand, A., Coughlin, M., Kankare, E., Sim, S. A., Fraser, M., Inserra, C., Maguire, K., Chambers, K. C., Huber, M. E., Krühler, T., Leloudas, G., Magee, M., Shingles, L. J., Smith, K. W., Young, D. R., Tonry, J., Kotak, R., Gal-Yam, A., Lyman, J. D., Homan, D. S., Agliozzo, C., Anderson, J. P., Angus, C. R., Ashall, C., Barbarino, C., Bauer, F. E., Berton, M., Botticella, M. T., Bulla, M., Bulger, J., Cannizzaro, G., Cano, Z., Cartier, R., Cikota, A., Clark, P., De Cia, A., Della Valle, M., Denneau, L., Dennefeld, M., Dessart, L., Dimitriadis, G., Elias-Rosa, N., Firth, R. E., Flewelling, H., Flörs, A., Franckowiak, A., Frohmaier, C., Galbany, L., González-Gaitán, S., Greiner, J., Gromadzki, M., Guelbenzu, A. N., Gutiérrez, C. P., Hamanowicz, A., Hanlon, L., Harmanen, J., Heintz, K. E., Heinze, A., Hernandez, M. S., Hodgkin, S. T., Hook, I. M., Izzo, L., James, P. A., Jonker, P. G., **Kerzendorf, W. E.**, Klose, S., Kostrzewa-Rutkowska, Z., Kowalski, M., Kromer, M., Kuncarayakti, H., Lawrence, A., Lowe, T. B., Magnier, E. A., Manulis, I., Martin-Carrillo, A., Mattila, S., McBrien, O., Müller, A., Nordin, J., O’Neill, D., Onori, F., Palmerio, J. T., Pastorello, A., Patat, F., Pignata, G., Podsiadlowski, P., Pumo, M. L., Prentice, S. J., Rau, A., Razza, A., Rest, A., Reynolds, T., Roy, R., Ruiter, A. J., Rybicki, K. A., Salmon, L., Schady, P., Schultz, A. S. B., Schweyer, T., Seitzzahl, I. R., Smith, M., Sollerman, J., Stalder, B., Stubbs, C. W., Sullivan, M., Szegedi, H., Taddia, F., Taubenberger, S., Terreran, G., van Soelen, B., Vos, J., Wainscoat, R. J., Walton, N. A., Waters, C., Weiland, H., Willman, M., Wiseman, P., Wright, D. E., Wyrzykowski, Ł., & Yaron, O. 2017, Nature, 551, 75, “*A kilonova as the electromagnetic counterpart to a gravitational-wave source*” ([ADS link](#))
- [22] Barna, B., Szalai, T., Kromer, M., **Kerzendorf, W. E.**, Vinkó, J., Silverman, J. M., Marion, G. H., & Wheeler, J. C. 2017, MNRAS, 471, 4865, “*Abundance tomography of Type Ia SN 2011ay with tardis*” ([ADS link](#))
- [23] **Kerzendorf, W. E.**, Do, T., de Mink, S. E., Götzberg, Y., Millisaljjevic, D., Zapartas, E., Renzo, M., Justham, S., Podsiadlowski, P., & Fesen, R. A. 2017, ArXiv e-prints, “*No surviving stellar companion for Cassiopeia A*” ([ADS link](#))

- [24] Heringer, E., van Kerkwijk, M. H., Sim, S. A., & **Kerzendorf, W. E.** 2017, *ApJ*, 846, 15, “*Spectral Sequences of Type Ia Supernovae. I. Connecting Normal and Subluminous SNe Ia and the Presence of Unburned Carbon*” ([ADS link](#))
- [25] Beaujean, F., Eggers, H. C., & **Kerzendorf, W. E.** 2018, *MNRAS*, 477, 3425, “*Bayesian modelling of uncertainties of Monte Carlo radiative-transfer simulations*” ([ADS link](#))
- [26] Magee, M. R., Sim, S. A., Kotak, R., & **Kerzendorf, W. E.** 2018, *A&A*, 614, A115, “*Modelling the early time behaviour of type Ia supernovae: effects of the ^{56}Ni distribution*” ([ADS link](#))
- [27] Do, T., **Kerzendorf, W.**, Konopacky, Q., Marcinik, J. M., Ghez, A., Lu, J. R., & Morris, M. R. 2018, *ApJ*, 855, L5, “*Super-solar Metallicity Stars in the Galactic Center Nuclear Star Cluster: Unusual Sc, V, and Y Abundances*” ([ADS link](#))
- [28] Barna, B., Szalai, T., **Kerzendorf, W. E.**, Kromer, M., Sim, S. A., Magee, M. R., & Leibundgut, B. 2018, *MNRAS*, 480, 3609, “*Type Ia supernovae as a few-parameter family*” ([ADS link](#))
- [29] **Kerzendorf, W. E.**, Long, K. S., Winkler, P. F., & Do, T. 2018, *MNRAS*, 479, 5696, “*Tycho-B: an unlikely companion for SN 1572**” ([ADS link](#))
- [30] **Kerzendorf, W. E.**, Strampelli, G., Shen, K. J., Schwab, J., Pakmor, R., Do, T., Buchner, J., & Rest, A. 2018, *MNRAS*, 479, 192, “*A search for a surviving companion in SN 1006*” ([ADS link](#))
- [31] Astropy Collaboration, Price-Whelan, A. M., Sipócz, B. M., Günther, H. M., Lim, P. L., Crawford, S. M., Conseil, S., Shupe, D. L., Craig, M. W., Dencheva, N., Ginsburg, A., VanderPlas, J. T., Bradley, L. D., Pérez-Suárez, D., de Val-Borro, M., Aldcroft, T. L., Cruz, K. L., Robitaille, T. P., Tollerud, E. J., Ardelean, C., Babej, T., Bach, Y. P., Bachetti, M., Bakanov, A. V., Bamford, S. P., Barentsen, G., Barmby, P., Baumbach, A., Berry, K. L., Biscani, F., Boquien, M., Bostroem, K. A., Bouma, L. G., Brammer, G. B., Bray, E. M., Breytenbach, H., Buddelmeijer, H., Burke, D. J., Calderone, G., Cano Rodríguez, J. L., Cara, M., Cardoso, J. V. M., Cheedella, S., Copin, Y., Corrales, L., Crichton, D., D’Avella, D., Deil, C., Depagne, É., Dietrich, J. P., Donath, A., Droettboom, M., Earl, N., Erben, T., Fabbro, S., Ferreira, L. A., Finethy, T., Fox, R. T., Garrison, L. H., Gibbons, S. L. J., Goldstein, D. A., Gommers, R., Greco, J. P., Greenfield, P., Groener, A. M., Grollier, F., Hagen, A., Hirst, P., Homeier, D., Horton, A. J., Hosseinzadeh, G., Hu, L., Hunkeler, J. S., Ivezić, Ž., Jain, A., Jenness, T., Kanarek, G., Kendrew, S., Kern, N. S., **Kerzendorf, W. E.**, Khvalko, A., King, J., Kirkby, D., Kulkarni, A. M., Kumar, A., Lee, A., Lenz, D., Littlefair, S. P., Ma, Z., Macleod, D. M., Mastroiello, M., McCully, C., Montagnac, S., Morris, B. M., Mueller, M., Mumford, S. J., Muna, D., Murphy, N. A., Nelson, S., Nguyen, G. H., Ninan, J. P., Nöthe, M., Ogaz, S., Oh, S., Parejko, J. K., Parley, N., Pascual, S., Patil, R., Patil, A. A., Plunkett, A. L., Prochaska, J. X., Rastogi, T., Reddy Janga, V., Sabater, J., Sakurikar, P., Seifert, M., Sherbert, L. E., Sherwood-Taylor, H., Shih, A. Y., Sick, J., Silbiger, M. T., Singanamalla, S., Singer, L. P., Sladen, P. H., Sooley, K. A., Sornarajah, S., Streicher, O., Teuben, P., Thomas, S. W., Tremblay, G. R., Turner, J. E. H., Terrón, V., van Kerkwijk, M. H., de la Vega, A., Watkins, L. L., Weaver, B. A., Whitmore, J. B., Woillez, J., Zabalza, V., & Astropy Contributors. 2018, *AJ*, 156, 123, “*The Astropy Project: Building an Open-science Project and Status of the v2.0 Core Package*” ([ADS link](#))
- [32] Shen, K. J., Boubert, D., Gänsicke, B. T., Jha, S. W., Andrews, J. E., Chomiuk, L., Foley, R. J., Fraser, M., Gromadzki, M., Guillochon, J., Kotze, M. M., Maguire, K., Siebert, M. R., Smith, N., Strader, J., Badenes, C., **Kerzendorf, W. E.**, Koester, D., Kromer, M., Miles, B., Pakmor, R., Schwab, J., Toloza, O., Toonen, S., Townsley, D. M., & Williams, B. J. 2018, *ApJ*, 865, 15, “*Three Hypervelocity White Dwarfs in Gaia DR2: Evidence for Dynamically Driven Double-degenerate Double-detonation Type Ia Supernovae*” ([ADS link](#))