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Current Position:

- (1st Sept 2017 -) Senior Post-Doc, University of Amsterdam, Netherlands

Previous Positions:

- (1st July 2014 - 31th July 2017) Post-Doc, Arizona State University, USA

Education:

- (1st Sept 2010 - 30th June 2014) PhD (STFC) “*Stellar and binary variability of survey fields*”, Dr Ulrich Kolb, Dr Andrew Norton, Dr Boris Gänsicke, The Open University, UK
- (1st Sept 2006 - 30th June 2010) MPhys (Hons) 1:1, University of Warwick, UK

Publications (23 published, 5 as first author, 2 submitted, 3438 citations):

1. **Farmer, R**, et al, (Submitted ApJ) “The cosmic carbon footprint of massive stars stripped in binary systems”
2. Laplace, E et al **w/Farmer**, (Submitted A&A) [Different to the core: the pre-supernova structures of massive single and binary-stripped stars](#)
3. **Farmer, R**, et al, 2020, ApJL, 902L, 36F, “[Constraints from gravitational wave detections of binary black hole mergers on the C12\(alpha,gamma\)O16 rate](#)”
4. van Son et al, **w/Farmer, R**, 2020, ApJ, 897, 100V, “[Polluting the pair-instability mass gap for binary black holes through super-Eddington accretion in isolated binaries](#)”
5. Renzo, M, **Farmer, R**, et al, 2020, A&A, 640A, 56R, “[Predictions for the hydrogen-free ejecta of pulsational pair instability supernovae](#)”
6. Farag, E, et al **w/Farmer, R**, 2020, ApJ, 893, 133F, “[On Stellar Evolution In A Neutrino Hertzsprung-Russell Diagram](#)”
7. Laplace, E, et al **w/Farmer, R**, 2020, A&A, 637A, 6L, “[The expansion of stripped-envelope stars: consequences for supernovae and gravitational-wave progenitors](#)”
8. Renzo, M, **Farmer, R**, et al, 2020, MNRAS, 493, 433R, “[Sensitivity of pulsational pair instability to the treatment of time dependent convection](#)”
9. Schwab, J, **Farmer, R**, Timmes, F. X, 2020 ApJ, 891, 5S, “[Laminar Flame Speeds in Degenerate Oxygen-Neon Mixtures](#)”
10. **Farmer, R**, et al, 2019, ApJ, 887, 53, “[Mind the Gap: The Location of the Lower Edge of the Pair-instability Supernova Black Hole Mass Gap](#)”
11. Marchant, P, et al **w/Farmer, R**, 2019, ApJ, 882, 36, “[Pulsational Pair-instability Supernovae in Very Close Binaries](#)”
12. Paxton, Bill et al; **w/Farmer, R**, 2019, ApJS, 243, 10, “[Modules for Experiments in Stellar Astrophysics \(MESA\): Pulsating Variable Stars, Rotation, Convective Boundaries, and Energy Conservation](#)”

13. Renzo, M. et al; w/**Farmer, R**, 2019, A&A, 624, A66, "[Massive runaway and walkaway stars. A study of the kinematical imprints of the physical processes governing the evolution and explosion of their binary progenitors](#)"
14. Zapartas, E; et al w/**Farmer, R**, S, 2019 A&A, 631, A5, "[The diverse lives of progenitors of hydrogen-rich core-collapse supernovae: the role of binary interaction](#)"
15. Paxton, Bill et al; w/**Farmer, R**, 2018, ApJS, 234, 34, "[Modules for Experiments in Stellar Astrophysics \(MESA\): Convective Boundaries, Element Diffusion, and Massive Star Explosions](#)"
16. Fields, C. E., et al w/**Farmer, R.**, 2018, ApJS, 234, 19, "[The Impact of Nuclear Reaction Rate Uncertainties on the Evolution of Core-collapse Supernova Progenitors](#)"
17. Patton, K, et al w/ **Farmer, R.**, 2017, ApJ, 851, 6, "[Neutrinos from Beta Processes in a Presupernova: Probing the Isotopic Evolution of a Massive Star](#)"
18. Patton, K, et al w/**Farmer, R.**, 2017, ApJ, 840, 2, "[Presupernova Neutrinos: Realistic Emissivities from Stellar Evolution](#)"
19. **Farmer, R**, et al, 2016, ApJS, 227, 22, "[On Variations Of Pre-supernova Model Properties](#)"
20. Fields, C. E., **Farmer, R**, et al, 2016, ApJ, 823, 46, "[Properties of Carbon-Oxygen White Dwarfs From Monte Carlo Stellar Models](#)"
21. Paxton, Bill et al; w/**Farmer, R**, 2015, ApJS, 220, 15, "[Modules for Experiments in Stellar Astrophysics \(MESA\): Binaries, Pulsations, and Explosions](#)"
22. **Farmer, R**, et al, 2015, ApJ, 807, 184, "[On Carbon Burning in Super Asymptotic Giant Branch Stars](#)"
23. Rauer, H. et al; w/**Farmer, R**, 2014, ExA, 38, 249, "[The PLATO 2.0 mission](#)"
24. Miglio, A., et al w/**Farmer, R.**, 2014, ApJL, 784, L3, "[Prospects for Detecting Asteroseismic Binaries in Kepler Data](#)"
25. **Farmer, R**, et al 2013, MNRAS, 433, 113, "[The true stellar parameters of the Kepler target list](#)"

Grants:

- (2020) LKBF travel funding (1K euros)
- (2019) LKBF travel funding (2*1K euros)
- (2018) LKBF travel funding (2*1K euros)
- (2018) 500K CPU hours on the Carteieus super-computing cluster
- (2017) LKBF travel funding (1K euros)
- (2013) RAS Grant for travel to KASC6 (£500)
- (2013) IOP Research Student Conference Fund for travel to KASC6 (£250)

Invited talks:

- (16/12/2021), GWPAW, **invited talk**, "*Pair instability supernovae and the gap*"
- (28/04/2021) MPA, **seminar**, "*No carbon left behind: Comparison of carbon yields between single massive stars and those stripped in binaries.*"
- (21/04/2021) Ben Gurion University, **colloquium**, "*Mind the gap: What can we learn about stellar astrophysics from gravitational wave detections of binary black holes?*"
- (06/04/2021), American Museum of Natural History, **colloquium**, "*Mind the gap:*"

What can we learn about stellar astrophysics from gravitational wave detections of binary black holes?"

- (09/02/2021), Texas Tech University, **colloquium**, *"Mind the gap: What can we learn about stellar astrophysics from gravitational wave detections of binary black holes?"*
- (03/12/2020) JINA Horizons, **invited talk**, *"Gravitational waves and nuclear astrophysics"*
- (12/11/2020) University of Mississippi, **colloquium**, *"What can we learn about stellar astrophysics from LIGO/VIRGO?"*
- (06/10/2020) Center for Computational Astrophysics, **invited talk**, *"The pair instability gap"*
- (27/08/2020), Hebrew University of Jerusalem, **colloquium**, *"What can we learn about stellar astrophysics from LIGO/VIRGO?"*
- (2020) **Invited lecturer** for *"Stellar Modelling for Nuclear Astrophysics"*, Summer school, Louisiana State University (Postponed to 2022)
- (13/08/2019) Keele, **colloquium**, *"What can we learn about stellar astrophysics from LIGO/VIRGO?"*

Talks/Posters:

- (26/07/2021) EPS-HEP2021, talk, *"What can we learn about stellar astrophysics from LIGO/VIRGO?"*
- (09/03/2021) VFTS, talk, *"No carbon left behind: Comparison of carbon yields between single massive stars and those stripped in binaries."*
- (02/07/2020) EAS 2020, *"Constraints from gravitational wave detections of binary black hole mergers on the C12(alpha,gamma)O16 nuclear reaction rate"*
- (2019) July 2, Lancaster, NAM 2019, talk *"What can we learn about stellar astrophysics from LIGO/VIRGO?"*
- (2019) May 30, KITP, Santa Barbara, talk *"How to Make Black Holes"*
- (2019) May 19, Nijmegen, Colloquium, *"What can we learn about stellar astrophysics from LIGO/VIRGO?"*
- (2018) November 8, Bariloche, *"Mind the gap: The pair instability boundary"*
- (2018) June 1, Stockholm, *"Mind the gap: The pair instability boundary"*
- (2018) May 12, NAC Groningen, *"Mind the gap: The pair instability boundary"*
- (2017) Dec 14, Bonn, Colloquium, *"Variation in pre supernovae model properties"*
- (2017) Dec 11 -12, 11 Bonn neutron star workshop *"Variation in pre supernovae model properties"*
- (2017) Oct 31 Nova 2 Groningen, *"How far can we trust stellar models?"*
- (2017) March 20 – March 2017, Phenomena, Physics, and Puzzles Of Massive Stars and their Explosive Outcomes, Santa Barabra, *"Variation in pre supernovae model properties"*
- (2016) EC-SN/SAGB workshop, *"Carbon burning in SAGB stars"*
- (2015) OU, seminar, *"Final fates of SAGB stars"*
- (2013) EPSC, 2013, *"The true stellar parameters of the Kepler target list"*
- (2013) KASC6, *"The true stellar parameters of the Kepler target list"*

Teaching:

- (2021) TA MESA Summer school, Santa Barbara, USA
- (2020) Guest lecturer(3hrs), Master's course, Stellar Astrophysics, Amsterdam, The Netherlands
- (2020) Guest Lecturer (1 hr), Bachelor's course, Stars, Harvard University, USA
- (2019) Guest lecturer (2*3 hrs), Master's course, Stellar Astrophysics, Amsterdam, The Netherlands
- (2018) Guest lecturer (2*4 hrs), Master's course, Computational Astrophysics, Amsterdam, The Netherlands
- (2014-2016) TA MESA Summer school, Santa Barbara, USA
- (2014-Now) MESA User support
- (2012-2013) Night Duty Astronomer, The Open University, UK

Service:

- Consultant on 400K Euro computing cluster
- Chaired the organisation of the 2019 ASPIRE summer school for students from under privileged backgrounds
- Referee for Science, Nature Astronomy, ApJ, ApJL, MNRAS, Royal Society

Students:

- Carla Garcia, ASPIRE Summer project, University of Amsterdam (2019)
 - *Improving the efficiency of supernovae simulations.*
- Sarah Kok, Masters, University of Amsterdam (2019-2020)
 - *The impact of binarity on PPISN progenitors.*
- Javier Fraile, Masters, University of Amsterdam (2018-2019)
 - *Effects of chemically homogeneous evolution due to spin up on the binary black. hole population*
- Mirron van der Kolk, Masters, University of Amsterdam (2018-2019)
 - *Modelling the population of black holes and neutron stars.*
- Mathieu Renzo, co-supervisor PhD, University of Amsterdam (2017-2019)
 - *The evolution of massive binary stars.*
- Eva Laplace, co-supervisor PhD, University of Amsterdam (2017-)
 - *Modelling the binary progenitors of supernovae.*
- Carl Fields, Undergraduate Summer projects, Arizona State University (2014-2016)
 - *The effect of rotation of the evolution of SAGB stars.*
 - *The effect of nuclear reaction rate uncertainties on white dwarfs*

Advisors:

- Dr Selma De Mink, MPA, Post-doc Advisor
- Prof Frank Timmes, Arizona State University, Post-doc Advisor
- Dr Ulrich Kolb, The Open University, Phd Supervisor

Memberships:

- Fellow of the Royal Astronomical Society, UK
- Associate member of the Institute of Physics, UK
- IAU junior member