

Dr. Samuel W. Jones

CONTACT INFORMATION	Alexander von Humboldt Postdoctoral Research Fellow Physik stellarer Objekte (PSO) Heidelberger Institut für Theoretische Studien Schloss-Wolfsbrunnenweg 35 69118 Heidelberg Deutschland	<i>Tel:</i> +49 6221 – 533 – 388 <i>E-mail:</i> samuel.jones@h-its.org <i>Fax:</i> +49 6221 – 533 – 298 <i>www:</i> swjones.github.io
RESEARCH INTERESTS	Stellar Evolution, Supernovae, Nucleosynthesis and Stellar Hydrodynamics: Progenitors of electron-capture, thermonuclear and core-collapse supernovae AGB, super-AGB stars and massive stars Convection, turbulence and convective boundary mixing in stars Weak interaction nuclear physics Neutron-capture nucleosynthesis Explosive nucleosynthesis 2D/3D hydrodynamics of low Mach number flows Validation of numerical simulation tools	
EDUCATION	2014	Ph.D. Physics, Keele University, UK Supervisor: Dr. R. Hirschi
	2010	B.Sc. Astrophysics (major) with Music Technology First Class Honours
ACADEMIC EXPERIENCE	Oct 2015 –	Co-PI , NuGrid Collaboration www.nugridstars.org
	May 2015 –	Alexander von Humboldt Postdoctoral Research Fellow Heidelberg Institute for Theoretical Studies, Germany
	Feb 2014 – Feb 2015	Postdoctoral Research Fellow University of Victoria, BC, Canada
	Feb 2014 – Dec 2014	Data Specialist Canadian Advanced Network for Astronomical Research (CANFAR) <i>Software-as-a-Service for Big Data Analytics</i>
	Oct 2010 – Jun 2012	Teaching Assistant Keele University, UK
TEACHING EXPERIENCE	2014	Replacement Lecturer University of Victoria, Canada AST-501: “Stellar interiors and Evolution”
	2010 – 2012	Teaching Assistant Keele University, UK Physics/astrophysics tutorial, problem class, lab
	2008 – 2013	Senior Physics and Mathematics Tutor Staffordshire Tuition, UK
AWARDS AND SERVICE	2010	STFC Ph.D. Studentship (3 yr funding grant)
	2014	Alexander von Humboldt Fellowship (2 yr award)
	2014	Reviewer for The Astrophysical Journal
	2016	Lindau Nobel Laureate meeting (Humboldt representative)
PUBLICATIONS		
	2016	Jones, S. , Andrassy, R., Sandalski, S., Davis, A., Woodward, P., and Herwig, F., “Idealised hydrodynamic simulations of turbulent oxygen-burning shell convection in 4π geometry”, <i>ArXiv e-prints</i> , <i>arXiv:1605.03766</i> , 2016 <i>arXiv160503766J</i> ; <i>cit.</i> 1
	2016	Jones, S. , Ritter, C., Herwig, F., Fryer, C., Pignatari, M., Bertolli, M. G., and Paxton, B., “H ingestion into He-burning convection zones in super-AGB stellar models as a potential site for intermediate neutron-density nucleosynthesis”, <i>Monthly Notices of the Royal Astronomical Society</i> , 455, 3848, 2016 <i>MNRAS.455.3848J</i> ; 5

- 2016 **Jones, S.**, Roepke, F. K., Pakmor, R., Seitzzahl, I. R., Ohlmann, S. T., and Edelmann, P. V. F., "Do electron-capture supernovae make neutron stars? First multi-dimensional hydrodynamic simulations of the oxygen deflagration", *ArXiv e-prints*, *arXiv:1602.05771*, 2016arXiv160205771J; 2
- 2015 Côté, B., Ritter, C., O'Shea, B. W., Herwig, F., Pignatari, M., **Jones, S.**, and Fryer, C., "Uncertainties in Galactic Chemical Evolution Models", *ArXiv e-prints*, *arXiv:1509.06270*, 2015arXiv150906270C; 3
- 2015 **Jones, S.**, Hirschi, R., Pignatari, M., Heger, A., Georgy, C., Nishimura, N., Fryer, C., and Herwig, F., "Code dependencies of pre-supernova evolution and nucleosynthesis in massive stars: evolution to the end of core helium burning", *Monthly Notices of the Royal Astronomical Society*, *447*, 3115, 2015MNRAS.447.3115J; 12
- 2015 Denissenkov, P. A., Truran, J. W., Herwig, F., **Jones, S.**, Paxton, B., Nomoto, K., Suzuki, T., and Toki, H., "Hybrid C-O-Ne white dwarfs as progenitors of Type Ia supernovae: dependence on Urca process and mixing assumptions", *Monthly Notices of the Royal Astronomical Society*, *447*, 2696, 2015MNRAS.447.2696D; 16
- 2014 **Jones, S.**, Hirschi, R., and Nomoto, K., "The Final Fate of Stars that Ignite Neon and Oxygen Off-center: Electron Capture or Iron Core-collapse Supernova?", *The Astrophysical Journal*, *797*, 83, 2014ApJ...797...83J; 7
- 2014 Denissenkov, P., Truran, J., Herwig, F., **Jones, S.**, Paxton, B., Nomoto, K., Suzuki, T., and Toki, H., "Hybrid C-O-Ne White Dwarfs as Progenitors of Diverse SNe Ia", *ArXiv e-prints*, *arXiv:1411.1471*, 2014arXiv1411.1471D; 0
- 2014 Bertolli, M. G., Möller, P., and **Jones, S.**, "Uncertainties in Astrophysical β -decay Rates from the FRDM", *Nuclear Data Sheets*, *120*, 188, 2014NDS...120..188B; 0
- 2014 Lam, Y. H., Martínez-Pinedo, G., Langanke, K., **Jones, S.**, Hirschi, R., Zegers, R. G. T., and Brown, B. A., "Electron Capture and Beta-Decay Rates for the Collapse of O+Ne+Mg Cores", *European Physical Journal Web of Conferences*, *66*, 07011, 2014EPJWC..6607011L; 2
- 2014 Dardelet, L., Ritter, C., Prado, P., Heringer, E., Higgs, C., Sandalski, S., **Jones, S.**, Denisenkov, P., Venn, K., Bertolli, M., Pignatari, M., Woodward, P., and Herwig, F., "i process and CEMP-s+r stars", *Proceedings of XIII Nuclei in the Cosmos (NIC XIII). 7-11 July, 2014. Debrecen, Hungary*. 2014nic..confE.145D; 0
- 2014 Möller, H., **Jones, S.**, Fischer, T., and Martínez-Pinedo, G., "Impact of Nuclear Reactions at High Densities on the Fate of Intermediate-Mass Stars", *Proceedings of XIII Nuclei in the Cosmos (NIC XIII). 7-11 July, 2014. Debrecen, Hungary*. 2014nic..confE.125M; 0
- 2013 **Jones, S.**, Hirschi, R., Nomoto, K., Fischer, T., Timmes, F. X., Herwig, F., Paxton, B., Toki, H., Suzuki, T., Martínez-Pinedo, G., Lam, Y. H., and Bertolli, M. G., "Advanced Burning Stages and Fate of 8-10 M_{\odot} Stars", *The Astrophysical Journal*, *772*, 150, 2013ApJ...772..150J; 39
- 2013 Toki, H., Suzuki, T., Nomoto, K., **Jones, S.**, and Hirschi, R., "Detailed β -transition rates for URCA nuclear pairs in 8-10 solar-mass stars", *Physical Review C*, *88*, 015806, 2013PhRvC..88a5806T; 9
- 2013 Pignatari, M., Herwig, F., Hirschi, R., Bennett, M., Rockefeller, G., Fryer, C., Timmes, F. X., Ritter, C., Heger, A., **Jones, S.**, Battino, U., Dotter, A., Trappitsch, R., Diehl, S., Frischknecht, U., Hungerford, A., Magkotsios, G., Travaglio, C., and Young, P., "NuGrid stellar data set I. Stellar yields from H to Bi for stars with metallicities $Z = 0.02$ and $Z = 0.01$ ", *ArXiv e-prints*, *arXiv:1307.6961*, 2013arXiv1307.6961P; 26
- 2012 **Jones, S.**, Hirschi, R., Herwig, F., Paxton, B., Timmes, F. X., and Nomoto, K., "Progenitors of electron-capture supernovae", *Death of Massive Stars: Supernovae and Gamma-Ray Bursts*, *279*, 341, 2012IAUS..279..341J; 1

TALKS

- 2016 Invited "The fate of intermediate-mass stars", Zakopane Conference on Nuclear Physics, Zakopane, Poland

- 2016 Invited “Simulating the lives and deaths of 8–10 solar-mass stars”, “Supernovae, Hypernovae and Binary Driven Hypernovae An Adriatic Workshop”, Pescara, Italy
- 2016 Invited Astrophysics Seminar, Los Alamos National Laboratory, New Mexico, USA
- 2016 Invited “Simulating the lives and deaths of 8–10 solar-mass stars”, Theorieseminar, TU Darmstadt, Germany
- 2016 “The ‘Bermuda Triangle’: evolution and fate of 8–12 solar-mass stars”, 18th workshop on Nuclear Astrophysics, Ringberg Castle at Lake Tegernsee, Germany
- 2016 Invited “Stellar Modelling”, NuPECC Town Meeting, GSI, Darmstadt, Germany
- 2015 Invited APEC Seminar, Kavli Institute for the Physics and Mathematics of the Universe (WPI), Tokyo, Japan.
- 2015 Invited “Stars on Death Row”, Seminar, Konkoly Observatory, Hungarian Academy of Sciences, Budapest, Hungary
- 2015 Review “Progenitors of electron-capture supernovae”, Fifty-one Ergs (FOE), NCSU, Raleigh, North Carolina, USA
- 2015 Invited “Modelling convection as a diffusive process”, Galactic evolution, Nuclear Astrophysics and Stellar Hydrodynamics (GNASH), JINA-CEE workshop, University of Victoria, Victoria, BC, Canada
- 2015 Invited “Hydrogen-ingestion in stars”, Galactic evolution, Nuclear Astrophysics and Stellar Hydrodynamics (GNASH), JINA-CEE workshop, University of Victoria, Victoria, BC, Canada
- 2014 Invited TAPIR Seminar: “Some outstanding problems in the evolution of supernova progenitors”, California Institute of Technology, Pasadena, California, USA
- 2014 Invited Seminar, Kavli Institute for the Physics and Mathematics of the Universe (WPI), Tokyo, Japan
- 2014 Invited Colloquium: “The evolution of supernova progenitors”, Physics Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee, USA
- 2014 “Progenitors of electron-capture supernovae”, Nucleosynthesis and Chemical Evolution Program INT-14-2b, Institute for Nuclear Theory, University of Washington, Seattle, USA
- 2014 Invited Seminar, Institut für Kernphysik Theoriezentrum, TU Darmstadt, Germany
- 2013 Invited Seminar, Kavli Institute for the Physics and Mathematics of the Universe (WPI), Tokyo, Japan
- 2013 “Supernovae from 8-12 solar mass stars: new stellar models”, Supernovae and Gamma-ray bursts 2013, Kyoto, Japan
- 2013 “Low mass (type II) supernova (progenitors): the transition”, NuGrid collaboration meeting, University of Victoria, BC, Canada
- 2013 “Advanced evolution and fate of 8-10 Mo stars”, Massive stars: from Alpha to Omega, Rhodes, Greece
- 2013 Invited “Progenitors of electron capture supernovae and related nuclear physics uncertainties”, “Astrophysics and Nuclear structure” (International Workshop XLI on Gross Properties of Nuclei and Excitations), Hirschegg, Kleinwalsertal, Austria
- 2012 “Impacts of convective boundary mixing and weak reaction uncertainties on 8-12 solar-mass stars”, EUROGENESIS MACHE meeting, Department of Physics, Goethe University, Frankfurt, Germany
- 2012 “The transition from super-AGB to massive star”, GSI Helmholtzzentrum für Schwerionenforschung (Heavy Ion Research), Darmstadt, Germany
- 2012 “Stellar evolution at the boundary between white dwarf and neutron star”, Short talks programme, Keele University, UK
- 2011 “Electron-capture supernova progenitor modelling”, Massive stars and Supernovae one-day workshop, Institute of Astronomy, University of Cambridge, UK

- 2011 “Comprehensive nucleosynthesis simulations in Massive and super-AGB star models”, NuGrid Collaboration meeting Open Day, University of Victoria, BC, Canada

POSTERS

- 2014 “CANFAR Software-as-a-service for NuGrid data exploration”, Nuclei in the Cosmos XIII, Debrecen, Hungary
- 2012 “Final evolution and fates at the transition between massive and super-AGB stars”, ESO/MPA/MPE/Excellence Cluster Universe Conference - “Supernovae Illuminating the Universe: from Individuals to Populations”, Garching, Germany
- 2012 “Life at the edge: Progenitors of the lowest mass core-collapse supernovae”, IAU Symposium 279 - “Death of Massive Stars: Supernovae and Gamma-Ray Bursts”, Nikko, Japan

REFERENCES
AVAILABLE TO
CONTACT

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S2—11, Schlossgartenstraße 2, 64289 Darmstadt

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