J. Ted Mackereth

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EDUCATION & TRAINING

University of Birmingham, Birmingham, UK
Galactic Archaeology Research Fellow, School of Physics & Astronomy 2019-Present
Asterochronometry Project (European Research Council Consolidator Grant)

Liverpool John Moores University, Liverpool, UK
PhD, Astrophysics Research Institute 2015 - 2019
Unveiling the History and Nature of the Milky Way using Galactic Surveys and Numerical Simulations

University of Liverpool / Liverpool John Moores University, Liverpool, UK
Master of Physics (MPhys), Astrophysics Research Institute, 1:1 2011-2015
The variation of NIR spectral lines by stellar parameters and chemical abundances

PAPERS
As first author

- **Mackereth JT**, Bovy J, Leung HW et al. *Dynamical heating across the Milky Way disc using APOGEE and Gaia*, 2019, MNRAS, Submitted.
- **Mackereth JT**, Schiavon RP, Pfeffer J et al. *The origin of accreted stellar halo populations in the Milky Way using APOGEE, Gaia, and the EAGLE simulations*, 2018, MNRAS, In press. (arXiv: 1808.00968)
- **Mackereth JT** and Bovy J *Fast estimation of orbital parameters in Milky-Way-like potentials*, 2018, PASP, 130:993 (arXiv:1802.02592)
- **Mackereth JT**, Crain RA, Schiavon RP et al., *The origin of diverse α-element enrichment in galaxy discs*, 2018, MNRAS, 477(4) (arXiv: 1801.03593)
- **Mackereth JT**, Bovy J, Schiavon RP et al. *The age-metallicity structure of the Milky Way disc using APOGEE*, 2017, MNRAS, 471(3) (arXiv: 1706.00018)

As Co-Author

- Boecker A, Leaman R, van de Ven G et al. (incl. **JTM**) *A galaxy's accretion history unveiled from its integrated spectrum* 2019, MNRAS, Submitted.
- Abolfathi B, Aguado DS, Aguilar G et al. (incl. **JTM**) *The Fourteenth Data Release of the Sloan Digital Sky Survey: First Spectroscopic Data from the Extended Baryon Oscillation Spectroscopic Survey and from the Second Phase of the Apache Point Observatory Galactic Evolution Experiment* 2018, ApJS, 235(2)
- Albareti, FD, Allende Prieto C, Almeida A et al. (incl. **JTM**) *The 13th Data Release of the Sloan Digital Sky Survey: First Spectroscopic Data from the SDSS-IV Survey Mapping Nearby Galaxies at Apache Point Observatory* 2017, ApJS, 233(2)
- Schiavon RP, Zamora O, Carrera R et al. (incl. **JTM**) *Chemical tagging with APOGEE: discovery of a large population of N-rich stars in the inner Galaxy* 2017, MNRAS, 465(1)

Conference Proceedings

- **Mackereth JT**, Bovy J, Schiavon RP and SDSS-IV/APOGEE Collaboration *The age-metallicity structure of the Milky Way disc with APOGEE* Rediscovering our Galaxy, IAU Symposium Vol. 334

TALKS & WORKSHOPS

- Weighing Stars from Birth to Death: How to Determine Stellar Masses?, *2018 Lorentz Center Workshop (Invited)*, Leiden, The Netherlands
- Constraining the formation of the Milky Way disk with APOGEE, Gaia and the EAGLE simulations, *Invited Plenary Talk, SDSS-IV Collaboration Meeting 2018*, Seoul, South Korea
- 2018 *Gaia* Sprint Participant, *CCA, Flatiron Institute*, New York City, USA
- The origin of diverse α-element enrichment in galaxy discs, *Friday Lunch Astronomy Talk*, ICC, Durham University
- Constraints on the origin of the high-[α/Fe] disc with APOGEE-*Gaia*, *Gaia: The billion-star galaxy census: at the threshold of Gaia data release 2, EWASS 2018*, Liverpool, UK

- Contextualising [α/Fe] bimodality in the EAGLE simulations, *Hello, goodbye: understanding the duality of the Milky Way, EWASS 2018*, Liverpool, UK
- Galactic Archaeology with mono-age stellar populations, *BISON Group talk*, March 2018, University of Birmingham
- The Milky Way in a cosmological context: The origin of diverse α-element enrichment in galaxy discs, *Virgo Collaboration Meeting 2017*, Garching, Germany
- Dunlap Institute Visiting Member, *Dunlap Institute, University of Toronto*, Toronto ON, Canada
- 2017 Gaia Sprint Participant, *MPIA*, Heidelberg, Germany
- Reconstructing the history of the Milky Way disc, *Poster Prize Talk, IAUS334: Rediscovering our Galaxy*, Potsdam, Germany
- Reconstructing the history of the Milky Way disc, *Bridging the near and the far: from the Milky Way to nearby galaxies, EWASS 2017*, Prague, Czech Republic
- Constraining models for Galactic disk formation with APOGEE and EAGLE, *SDSS-IV Collaboration Meeting 2016*, Madison, WI

GRANTS & AWARDS

- 2018 SDSS Early Career Travel Fund Grant, *USD 600*
- 2017 Dunlap Visitor Grant, *CAD 1800* Dunlap Institute, University of Toronto
- 2017 RAS Personal Grant, *GBP 1000* The kinematics and dynamics of mono-abundance populations in the Milky Way using Gaia and APOGEE
- IAUS334 Travel Grant, *EUR 280*
- Poster Prize, *IAUS334*, Potsdam, Germany

OTHER AFFILIATIONS

- SDSS 'Milky Way as a Galaxy' Working Group Co-Chair
- SDSSIV/APOGEE-2 Team member
- APO-K2 Core-science team member
- WEAVE survey Galactic Archaeology science working group Member
- Reviewer: MNRAS, ApJ, A&A

SOFTWARE

- Developer of *sewingmachine* equivalent width code
- *Galpy* galactic dynamics package contributor
- Member of LJMU ARI Computing committee

Languages: Python, Stan, Tensorflow, SQL, LaTeX.

TEACHING & MENTORING

Liverpool John Moores University
- Senior Demonstrator, *Practical Astrophysics*
- Tutor, *Computational Galactic Dynamics, Distance Learning MSc*
- Teaching Assistant, *Introduction to Astrophysics*
- Mentoring of *MPhys* project students
- PhD student talks organiser, 2017

OUTREACH ACTIVITIES

- Tim Peake Cosmic Classroom Event, February 2016 *World Museum, Liverpool*
- The Size of the Universe (talk/workshop), April 2016 *Werneth Primary School, Oldham, UK*
- Travelling to Space (talk/workshop), March 2018 *Abraham Moss Community School, Manchester, UK*
- Undergraduate open days student representative, 2016-2018 *Liverpool John Moores University / University of Liverpool*

SPECIFIC SKILLS

- Stellar spectroscopy
- Numerical simulations of galaxy formation
- Statistical modelling and inference in multidimensional data

- Analysis of massive stellar surveys (APOGEE, *Gaia*, WEAVE)