



Mx Stephanie Campbell

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Education

UNIVERSITY OF ST ANDREWS

PHD IN ASTRONOMY

 Exp July 2023  St Andrews, UK

- Dynamical modelling, kinematics, and evolution of galaxies using integral field and radio observations
- Supervised by Dr Anne-Marie Weijmans

UNIVERSITY OF EDINBURGH

MPhys IN ASTROPHYSICS

 August 2019  Edinburgh, UK

- Senior Honours research: Milky Way kinematics with Gaia, supervised by Dr Nick Rowell
- Masters research: connecting AGN activity and galaxy environment, supervised by Prof Philip Best and Dr José Sabater Montes

Awards and Honours

TALK AWARDS

DEX MEETING 2023: DAY 2 BEST TALK WINNER

POSTER AWARDS

NATIONAL ASTRONOMY MEETING 2021: WINNER

NATIONAL ASTRONOMY MEETING 2022: RUNNER UP

MINISTERIAL VISIT

CHOSEN TO REPRESENT THE DEPARTMENT PRESENTING MY WORK TO THE SCOTTISH MINISTER FOR HIGHER EDUCATION

External Roles

SCOTTISH LIAISON MEMBER FOR THE INTERNATIONAL SOCIETY OF NONBINARY SCIENTISTS

- Grew Scottish membership by at least 500%

SDSS COMMITTEE ON INCLUSIVENESS (COINS)

- Consulted to help develop recommendations for conference inclusion

Observing Experience

- Telescope project during Undergraduate degree using Edinburgh University Student Telescope to measure distance to Andromeda using Cepheid Variable Stars
- 7 night observing run in March 2020 using the IAC80, Tenerife. Conducted remotely due to COVID-19 restrictions

Research Interests

- Dynamical models of galaxies to measure dark matter content
- Galaxy evolution and star formation histories
- Integral field spectroscopy
- Neutral hydrogen kinematics
- Interplay of internal and external processes on galaxy evolution and patterns of quenching

Research Experience

ADDING COLD GAS TO DYNAMICAL MODELS

- Developing a method through Python software to combine unresolved 21cm observation from GBT with integral field data from MaNGA in order to improve upon Jeans modelling for dark matter fractions in galaxies
- Experience with dynamical modelling and statistical MCMC methods
- Familiarity working with IFS data (both from MaNGA and SAURON) and single dish radio data

COMPARING RESOLVED 21CM OBSERVATIONS WITH UNRESOLVED 21CM OBSERVATIONS

- Using resolved 21cm observations from Apertif of galaxies already observed in MaNGA and H I -MaNGA to replicate previous use of unresolved data for comparison
- Experience using resolved hydrogen data

POST-STARBURST STAR FORMATION HISTORIES WITH WEAVE

- Analysing integral field data from the science verification stage of the WEAVE survey to model spatially resolved star formation histories across the galaxies
- Experience with WEAVE IFS data
- Experience using Bagpipes code for stellar population modelling

RESOLVED POST-STARBURST REGIONS IN JELLYFISH GALAXIES

- Identifying post-starburst regions on the leading edge of jellyfish galaxies in MaNGA
- Using phase space information and fitted star formation histories to determine quenching timescales and RPS effects in dense environments

MEASURING THE INCLINATIONS OF RED GEYSER GALAXIES

- Using Jeans modelling to accurately measure the inclination of a sample of galaxies in order to constrain the escape velocity and identify outflows from AGN activity

Skills

- Python
- Data analysis and statistics
- Dynamical modelling methods
- Integral field spectroscopy
- H I radio data
- Stellar population modelling for resolved star formation histories

Department Contributions

TEACHING

- Tutor for AS1101, AS1002: First year Astronomy courses, including AS1101 for the Gateway cohort, an entry point for Scottish students through the Widening Participation programme
- Lab demonstrator for AS1001, introducing first year students to Python for Astronomy
- Guest lectures for AS4010 in 2021 and 2022, letting Senior Honours students experience a research talk and learn to form appropriate questions
- Invited marker for PH3014: Junior Honours students present talks on contemporary research topics at a mock conference for assessment. Ordinarily marking is for teaching and research staff, however I was invited to mark as the only PGR due to being known in the department for my public speaking

EQUITY, DIVERSITY, AND INCLUSION

- PGR Astro Representative on department EDI Committee
- Founding member and organiser of PandA StrIDES (Physics and Astronomy at St Andrews Inclusion, Diversity and Equity Seminar). A **funded** seminar series hosting external guest speakers on EDI issues in our field. The organisers applied for, and were granted, external funding of £1600

OUTREACH

- Mobile Planetarium Coordinator: Guided the change from in-person to virtual remote format during the pandemic
- Produced video content explaining dark matter to a general audience for Explorathon and European Researchers Night. Also provided questions for an Explorathon pub quiz event, making an appearance to give answers

Publications, Talks, Posters

PUBLICATIONS

- **In prep:** *Dynamical Modelling of MaNGA Galaxies Using Cold Gas*, **Campbell, S.**, et al
- **April 2022:** *The Seventeenth Data Release of the Sloan Digital Sky Surveys: complete release of MaNGA, MaStar and APOGEE-2 data*, Abdurro'uf, Accetta, K., et al [including **Campbell, S.**], In: *Astrophysical Journal Supplement Series*. 259, 2, 39 p., 35.
- **May 2021:** *Evidence of wind signatures in the gas velocity profiles of red geysers*, Roy, N., et al [including **Campbell, S.**], In: *Astrophysical Journal*. 913, 1, 19 p., 33.

CONFERENCE TALKS

- *Improving Dynamical Modelling of Dark Matter in Galaxies Using Cold Gas*, SUPA Annual Gathering, 16th May 2023 [**Invited**]
- *Using Cold Gas to Elevate Dynamical Models of Galaxies in MaNGA*, DEX-XIX, 11th Jan 2023 [**Won Day 2 Best Talk**]
- *Incorporating Cold Gas into Dynamical Models of Galaxies in MaNGA*, Oxford Wetton Workshop, 21st Sept 2022
- *Measuring the Invisible: Shining a Light on Dark Matter in Galaxies*, LGBTQ+ STEMinar 2022, 14th Jan 2022
- *Incorporating Cold Gas into Dynamical Models of Galaxies in MaNGA*, SDSS Collab Meeting, 11th Aug 2021
- *Dynamical Modelling of MaNGA Galaxies Using Cold Gas*, DEX-XVII, 6th Jan 2021
- *Using H I Gas to Model Dark Matter Haloes in MaNGA*, Month of Online MaNGA, Oct 2020
- *Dynamical Modelling of Galaxies Using Cold Gas*, SDSS Collab Meeting, 25th June 2020
- *Dynamical Modelling of Galaxies Using Cold Gas*, Weave-Apertif Meeting 27th May 2020

POSTERS

- *Improving Measurements of Dark Matter Content in MaNGA Galaxies Using Dynamical Models*, National Astronomy Meeting, 14th July 2022, [**Won Runner Up Poster**]
- *Using H I Gas to Model Dark Matter Haloes in MaNGA*, National Astronomy Meeting, 22nd July 2021, [**Won Best Poster**]

NON-RESEARCH CONTRIBUTIONS

- *Hot Potato: Who Takes Responsibility for EDI Issues?*, National Astronomy Meeting, 14th July 2022 Accepted EDI Poster at National Astronomy Meeting 2022
- *Being LGBTQ+ in Physics & Astronomy*, 23rd November 2021, St Andrews Astronomy Lunch Talk
Internal Department Talk for LGBTQ+ in STEM Day

Reference Contacts

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