

THOMAS MOORE

Queen's University Belfast, School of Maths & Physics | tmoore11@qub.ac.uk

INTERESTS

The astrophysics and discovery of transient objects, supernovae, kilonovae. Real time searches for gravitational wave counterparts and time-domain optical surveys. Analysis and modelling of supernova light curves and spectra.

EDUCATION

Queen's University Belfast, UK *Oct. 2021 - Oct. 2024 (expected)*

PhD Astrophysics, Thesis title: Magic in the Mundane: exploring the diversity of often unregarded stripped-envelope supernovae, Supervisors: Prof. Stephen Smartt, Dr. Matt Nicholl, Dr. Stuart Sim

Queen's University Belfast, UK *Sep. 2016 - May. 2021*

MSci Physics with Astrophysics, First-Class Honours Thesis title: The Origin of Umbral Waves: Sub-surface Eigenmodes or Resonance Cavity Harmonics?, Supervisor: Prof. David Jess

Saint Martin's University, USA *Aug. 2018 - May. 2019*

Non-Degree Exchange Student (Business, Economics and Astrophysics)

TECHNICAL SKILLS

Data analysis: IRAF, EsoReflex

Programming: Python, IDL (limited experience) Active user of; MOSFiT, superbol, TARDIS, and emcee packages

Languages: English (native proficiency)

OBSERVING EXPERIENCE

ESO New Technology Telescope / EFOSC2 + SOFI (**11 nights + 7 upcoming**); Liverpool Telescope (**20+ hours over numerous programs**); Las Cumbres Observatory (**triggering via SNEX**), ATLAS SN Discovery (**discovery of SNe in the ATLAS data stream**)

PRESENTATIONS

Transients Down Under, Melbourne (upcoming) - contributed talk *January 2024*

SN 2022jli: a type Ic supernova with periodic modulation of its light curve and an unusually long rise

ePESSTO+ Meeting, Warsaw (remote) - consortium talk *Septmeber 2023*

SN 2022jli: the tumultuous demise of a colliding wind binary?

National Astronomy Meeting, Cardiff - contributed talk *July 2023*

SN 2022jli: a unique Type Ic supernova with bumpy light curve

QUB Seminar, Belfast - Astrophysics Center Seminar *January 2023*

Hiding in Plain Sight: Uncovering a Population of Long-Duration Stripped-Envelope Supernovae

ATLAS Meeting, Belfast - consortium talk *May 2022*

A population of long-duration Ib/c supernovae in ATLAS

OUTREACH AND SERVICE

Astrophysics Student Representative

2022-2024

Representative of all astrophysics students at QUB. Attending quarterly School Postgraduate Research Committee meetings and point of contact for graduate student issues.

Irish Astronomical Association - Outreach Lecture

Upcoming (December 2023)

Title: Fast! Slow? Bright or Faint?: exploring the diversity of supernovae

Irish Astronomical Association - Outreach Lecture

November 2022

Title: Discovery and Classification of Supernovae in the Local Universe

Our Place in Space - London Science Museum Supernova discovery and discussion at a Lates event at the museum. *October 2022*

Supernova Discovery Live - Outreach Activity

Multiple Events

Live “eyeballing” ATLAS data as public engagement.

EXPERIENCE AND WORKSHOPS

ENGRAVE Data Reduction Workshop, Naples (remote)

April 2023

Triggering and data reduction workshop including training on X-Shooter, FORS2, HAWK-I and MUSE reduction pipelines.

ENGRAVE Meeting, MPA, Munich

February 2023

ePESSTO+ Target and Alerts Team

Numerous Observing Runs

ePESSTO+ Workshop, Barcelona

June 2022

MEMBERSHIPS AND AFFILIATIONS

ePESSTO+

ATLAS

LS4

ENGRAVE

Pan-STARRS

Global Supernova Project

LSST:UK Junior Associate

PERSONAL REFERENCES

Prof. Stephen Smartt - University of Oxford - PhD supervisor

Dr. Matt Nicholl - Queen’s University Belfast - PhD supervisor

Dr. Joe Anderson - European Southern Observatory

Dr. Stuart Sim - Queen’s University Belfast - PhD supervisor

Dr. Shubham Srivastav - University of Oxford

PUBLICATIONS

All publications are available on the NASA Astrophysics Data System

Publications as first author:

SN 2022jli: a type Ic supernova with periodic modulation of its light curve and an unusually long rise, **Moore, T.**, Smartt S., J., Nicholl, M., Srivastav, S., Stevance H., F., et al. (2023), ApJL, 10.3847/2041-8213/acfc25

Publications with major contribution:

Unprecedented early flux excess in the hybrid 02es-like type Ia supernova 2022ywc indicates interaction with circumstellar material, Srivastav, S., **Moore, T.**, Nicholl, M., Magee, M. R., Smartt, S. J., et al. (2023), arXiv, 2023arXiv230806019S

Photometry and spectroscopy of the Type Icn supernova 2021ckj. The diverse properties of the ejecta and circumstellar matter of Type Icn supernovae, Nagao, T., Kuncarayakti, H., Maeda, K., **Moore, T.**, Pastorello, A., et al. (2023), *A&A*, 2023A&A...673A..27N

The Optical Light Curve of GRB 221009A: The Afterglow and the Emerging Supernova, Fulton, M. D., Smartt, S. J., Rhodes, L., Huber, M. E., Villar, V. A., **Moore, T.** et al. (2023), *ApJL*, 2023ApJ...946L..22F

Co-authored publications:

GW190425: Pan-STARRS and ATLAS coverage of the skymap and limits on optical emission associated with FRB190425, Smartt, S. J., Nicholl, M., Srivastav, S., Huber, M. E., Chambers, K. C., et al. **incl. Moore, T.** (2023), *arXiv*, 2023arXiv230911340S

AT 2022aedm and a New Class of Luminous, Fast-cooling Transients in Elliptical Galaxies, Nicholl, M., Srivastav, S., Fulton, M. D., Gomez, S., Huber, M. E., et al. **incl. Moore, T.** (2023), *ApJL*, 2023ApJ...954L..28N

A Precursor Plateau and Pre-Maximum [O II] Emission in the Superluminous SN2019szu: A Pulsational Pair-Instability Candidate, Aamer, A., Nicholl, M., Jerkstrand, A., Gomez, S., Oates, S. R., et al. **incl. Moore, T.** (2023), *arXiv*, 2023arXiv230702487A

The broad-lined Type-Ic supernova SN 2022xxf with extraordinary two-humped light curves, Kuncarayakti, H., Sollerman, J., Izzo, L., Maeda, K., Yang, S., et al. **incl. Moore, T.** (2023), *arXiv*, 2023arXiv230316925K

The Luminous Type Ia Supernova 2022ilv and Its Early Excess Emission, Srivastav, S., Smartt, S. J., Huber, M. E., Dimitriadis, G., Chambers, K. C., et al. **incl. Moore, T.** (2023), *ApJL*, 2023ApJ...943L..20S

SN 2020zbf: A fast-rising hydrogen-poor superluminous supernova with strong carbon lines, Gkini, A., Lunnan, R., Schulze, S., Dessart, L., Brennan, S. J., et al. **incl. Moore, T.** (2023), *arXiv*, 2023arXiv231006814G

The Birth of a Relativistic Jet Following the Disruption of a Star by a Cosmological Black Hole, Pasham, D. R., Lucchini, M., Laskar, T., Gompertz, B. P., Srivastav, S., et al. **incl. Moore, T.** (2023), *NatAs*, 2023NatAs...7...88P

NON-REFEREED PUBLICATIONS

First author of 24 TNS AstroNotes available as an NASA ADS library