THOMAS MOORE

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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: Subsurface 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)

PROJECTS

SN 2022jli - ongoing analysis *1 paper published, work ongoing*
Follow-up observations and modelling of the enigmatic SN 2022jli. Extensive data has already taken late time photometric monitoring is underway.

SN 2022qh - single object paper *paper in prep.*
Extensive follow-up of the luminous / long-lived transient SN 2022qh. This supernova links SN 2005bf and SN 2022wnt, suggesting there may be a continuum of long rise-time, luminous SN Ic without O II lines associated with SLSN-I.

Hiding in Plain Sight: Revealing a Population of Long-Duration Stripped-Envelope Supernovae with ATLAS *paper in prep*
Duration-luminosity phase space analysis reveals a population of luminous and slow evolving SN Ib/c supernovae in ATLAS archival data.

ATLAS Volume Limited Survey: Duration-Luminosity Phase Space analysis of supernovae within 100 Mpc *upcoming work*
Luminosity and duration analysis of the ATLAS VLS (d<100 Mpc) sample.

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 (remote) - 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 (upcoming) - 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 , MPA, Munich *February 2023*

ePESSTO+ Workshop, Barcelona *June 2022*

MEMBERSHIPS AND AFFILIATIONS

ePESSTO+
ENGRAVE
Global Supernova Project
ATLAS
Pan-STARRS
LSST:UK Junior Associate
LS4

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

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