

Noel Castro Segura



Title

The Outflow Accretion Legacy Surveys (OLAS): simultaneous panchromatic observations of the low mass X-ray binary Swift J1858

Abstract

I will present the results of a unique multi-wavelength campaigns focused on the recently discovered LMXB Swift J1858. This system displayed extreme variability in both X-ray and optical bands, similar to the famous black hole binary V404 Cyg during its 2015 outburst. Our observations covered the full frequency range from X-ray to radio and were provided by observatories including XMM-Newton, NuSTAR, NICER, VLTs, Gemini, GTC, VLA, MeerKAT and HST. A key feature of the campaign is a 4-hour window during which we obtained time-resolved, strictly simultaneous observations across the whole electromagnetic spectrum.

I will walk you through the findings obtained by monitoring programs of independent instruments, then we will step back into a multi-wavelength perspective to get insights in the geometry of the system and the physical mechanism driving its outflows, unveiled thanks to the unprecedented coordination of several major observatories across the globe. We will finish with an overview of the findings of the system and how coordinated multi-wavelength campaigns can help us to understand the physics of compact objects and how they interact with their environment.

All of the survey data products will be made available to the scientific community in a ready-to-use format accompanied by practical examples.

NOEL CASTRO SEGURA

My interests focus on the nature of accretion onto compact objects, the interaction of their ubiquitous outflows with other physical components and their environment ("feedback"), and how they affect evolution of the systems. I employ a combination of simultaneous spectroscopic observations of binary stars across the electromagnetic spectrum, as a test-bed of our theoretical knowledge and to determine the driving mechanism(s) of these outflows.

CONTACT

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- 📞 0000-0002-5870-0443
- 📄 NASA/ADS publication list

RESEARCH INTERESTS

- Accretion
- Outflows
- Binary stars
- Compact objects
- Multi-wavelength
- UV
- Optical
- NIR
- Time-resolved
- Spectroscopy
- Spectropolarimetry
- Time domain
- Instrumentation
- Stats
- Bayesian inference
- Timing
- Machine Learning
- Data mining

SKILLS

Programming

- Python
- Bash
- C++
- PHP/SQL
- R

Software & Tools

- Visualisation
- Data handling/analysis (e.g. pandas, scikit-learn, emcee, ...)
- X-ray specific (e.g. ISIS, CIAO, ...)
- Simulations (e.g. MESA, cloudy, ...)

Soft skills

- Communication
- Public engagement
- Flexibility
- Teamwork
- Leadership

COLLABORATIONS

- OLAS
- ALeRCE
- ThunderKAT
- DES
- ePESTO+
- PYTHON¹
- OptiCAM

¹Radiative transfer code

EDUCATION

- 📅 2017 - Present
📍 University of Southampton, U.K.
🎓 **PhD. in Astronomy & Astrophysics**
Title: "Accreting Compact Binaries: Accretion, Outflows and Evolution". Advisor: C. Knigge
- 📅 2015 - 2017
📍 University of La Laguna, TF, Spain
🎓 **MSc. in Instrumentation & Observational Astrophysics**
- 📅 2010 - 2015
📍 University of La Laguna, TF, Spain
🎓 **BSc. in Physics**
- 📅 2005 - 2007
📍 C.E.S Stgo Ramón y Cajal, GR, Spain
🎓 **HND Inf. Systems Manager (IT)**

EXPERIENCE

Observing

- PI: HST
- VLTs
- Gemini
- XMM-Newton
- NICER
- LT

- Visitor: NTT
- INT
- TCS
- IAC80

Teaching (Southampton)

- Intro to astronomy • Programming, data analysis and stats.
- Design & Observation in Astro. • Physics from Evidence I.

LOC/SOC : A (Hubble) Tension Headache (2021), The Big data Era in Astronomy (2020), EWASS(2015).

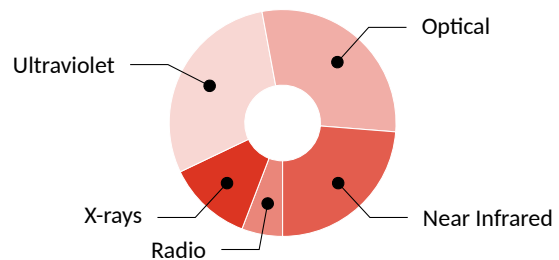
Public engagement: Astrodome, Pint of Sci(U.K), MCC(Spain).

Other: CMOS characterization (SPRINT project) • HARMONI@IAC • Oceanography (VULCANO@IEO)

AWARDS

- Guillermo Haro
- COSPAR
- PHAROS STSM
- Entropy

MY UNIVERSE - WEIGHTED BY WAVELENGTH



FEATURED PUBLICATION

Bow-shocks, nova shells, disc winds and tiled discs: The Nova-Like V341 Ara Has It All

👤 Noel Castro Segura, Christian Knigge, et al.

📅 2020

📄 2021MNRAS.501.1951C

🔗 ADS