# Juan Venancio Hernández Santisteban

*Curriculum Vitae*

*Anton Pannakoek Institute*
*University of Amsterdam*
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## Research Interests

My current research covers the study of compact objects –white dwarf, neutron stars and black holes– in binary systems across the electromagnetic spectrum. My work has focused on the study of both components of the binary system, the compact accretor and low-mass star/brown dwarf companion, as useful laboratories of fundamental astrophysical concepts. These studies, using space- and ground-based facilites such as *HST* and *VLT*, had led to results in sub-stellar atmospheres (hot-Jupiters), stellar and binary evolution as well as accretion physics.

## Education

2012–2016 **PhD in Physics**, *University of Southampton*, Southampton, United Kingdom.
Thesis: Multi-wavelength Observations of Accreting Compact Objects.
Exam Date: September 5, 2016.
Advisor: Prof. Christian Knigge
Thesis Examiners: Prof. Phil A. Charles and Dr. Danny Steeghs

2009–2011 **M.Sc in Astronomy**, *Universidad Nacional Autónoma de México*, Mexico City, Mexico.
Thesis: Photometric and spectroscopic study of the cataclysmic variable J0644+3344.
Exam Date: 29 June 2011.
Advisor: Prof. Juan Echevarría Román

2004–2008 **B.Eng. Mechanical Engineer**, *Universidad Nacional Autónoma de México*, Mexico City, Mexico.
Thesis: Heat transfer finite element analysis of the mechanical structure of ESOPO spectrograph.
Exam Date: 16 February 2009.
Advisor: Dr. Alejandro Farah Simón

## Profesional history

2016 – Present **Post-Doctoral Researcher**, *Anton Pannekoek Institute, University of Amsterdam*, the Netherlands.
Researcher in multi-wavelength follow-up and characterisation of low-level accreting compact objects (COLA) with Dr. Nathalie Degenaar.

### Teaching

2014–2016 **Instructor**, *University of Southampton*, Southampton, UK.
Instructor in the field-trip for courses in *European Dimension in Space and Design*; and *Observation in Astronomy* at the Teide Observatory, Tenerife, Spain.

2012–2016 **Teaching Assistant**, *University of Southampton*, Southampton, UK.
Teacher assistant in undergraduate courses such as: Galaxies, Stellar Evolution and Programming and Data Analysis.

2010-2012 **High School Teacher**, *Green Hills School*, Mexico City, Mexico.
Physics teacher in middle school and advanced mathematics at GSCE/A-level.

### Service

- Referee for the Mexican GTC Allocation Committee.
- Referee for Monthly Notices of the Royal Astronomical Society (MNRAS).

## Publications and Observing Programmes

See separate list.

## Invited Talks and Conferences

17 academic talks since September 2012. Recent highlights include seminars at IoA/Cambridge, IA-UNAM, Southampton and Oxford. Solicited conference talks at *COSPAR/CV-Nova session* (2018, Pasadena) and *Accretion Week* (2017, La Gomera); contributed talks at the *29th Texas Symposium on Relativistic Astrophysics* (2017, Cape Town), *The Future of Astronomy and Planetary Science in the Ultraviolet* (2016, Warwick), *Formation and Evolution of Neutron Stars* (2015, Bonn) and *The Zoo of Accreting Compact Objects* (2015, Leiden).

## Scholarships, Grants and Awards

2017 €450 — LKBF travel grant Accretion Week Workshop at La Gomera, Spain.

2016 €2500 — COST Short Term Scientific Mission grant to visit the Institute of Astronomy, University of Cambridge for 2 months.

2016 — *Carlos Fuentes Award* for the most distinguished Mexican student in the UK. Awarded by the Mexican Embassy in the UK and the Society of Mexican Students in the United Kingdom.

2014 £650 — Royal Astronomical Society travel grant for academic visit to Columbia University and the American Museum of Natural History in New York, USA.

2014 — Outstanding Astronomy Postgraduate Award for public engagement at University of Southampton.

2012–2016 — Full Scholarship for PhD studies granted by Consejo Nacional de Ciencia y Tecnología (CONACyT) in its *Scholarships for Studies in Foreign Countries*.

2012–2015 £9000 — Postgraduate Research Scholarship Fund granted by the University of Southampton for the duration of my PhD studies.

2011 — Grant awarded by Coordinación de Estudios de Posgrado (Graduate Studies Coordination) at UNAM for promotion of graduation.

2009-2011 — Full Scholarship granted by Consejo Nacional de Ciencia y Tecnología (CONACyT) for the duration of my Master in Science (Astronomy) studies.

2008 — Scholarship granted by DGAPA project during my last year in Mechanical Engineering. It was granted by Dr. Alejandro Farah Simón at the Instituto de Astronomía, UNAM.

## Workshops

2017 — **James Webb Space Telescope (JWST) Proposal Workshop**, *ESAC*, Madrid, Spain.

2016 — **ICIC Astrostatistics**, *Royal Astronomical Society*, London, UK.

2015 — **Module for Experiments in Stellar Astrophysics (MESA) Summer School**, *UC Santa Barbara, USA*.

2014 — **ICIC Data Analysis Workshop**, *Imperial College London*, London, UK.

## Outreach and Public Engagement

- 2014-2016. Mobile planetarium manager (Astrodome) in the outreach astronomy team at the University of Southampton.
- 2012-2017. Astronomy talks at the XI, XII, XIII and XV Symposiums of Mexican Students and Studies in the UK.
- Public outreach talks at Southampton Astronomical Society (2015) and BBC Stargazing Live 2016.
- 2008-present. Member of the Mexican Astronomical Society. I gave regular talks and developed seminars for introduction to astronomy.
- 2008-2011. Participant in workshops during the annual "Noche de las Estrellas" astronomy outreach event in Mexico City.

## Publication List

For a full list of publications @ ORCID: 0000-0002-6733-5556

### First Author

- **Hernández Santisteban J.V.**, Knigge C., Pretorius, M. L., Sullivan, M. & Warner, B., "*The space density of post-period minimum cataclysmic variables*", 2018, *MNRAS*, 473, 3241.
- **Hernández Santisteban J.V.**, Cúneo V., Degenaar N., van den Eijnden J. , Altamirano D., Gómez M. N. , Russell D M. , Wijnands R. , Golovakova R., Reynolds M. T. & Miller J.M., "*Evidence for the ultra-compact nature of IGR J17062–6143*", 2018, *MNRAS*, submitted. arXiv:1801.03006
- **Hernández Santisteban J.V.**, C. Knigge, D. Altamirano, A. Archibald, C. Bassa, R. P. Breton, J. Greiner, J. Hessels, N. Degenaar, J. H. Matthews & J. Patterson, "*HST* ultraviolet observations of the transitional millisecond pulsar PSR J1023+0038 in the accreting state", 2017, *MNRAS*, in prep.
- **Hernández Santisteban J.V.**, Echevarría J., Michel R. & R. Costero, "*Doppler Tomography and Photometry of the Cataclysmic Variable 1RXS J064434.5+334451*", 2017, *MNRAS*, 123, 456.
- **Hernández Santisteban J.V.**, Knigge, C. , Littlefair, S. P. , Breton, R. P. , Dhillon, V. S. , Gänsicke, B. T. and Marsh, T. R. , Pretorius, M. L. , Southworth, J. & Hauschildt, P. H., "*An irradiated brown-dwarf in an accreting white dwarf*", 2016, *Nature*, 533, 366.

### Collaborations

- Parikh, A. S. ,**Hernández Santisteban J.V.** and Wijnands, R., "*Optical and UV observations of MASTER 075353.88+174907.6: likely a superoutburst of a dwarf nova*, 2018, *MNRAS*, submitted.
- Echevarría, J., **Hernández Santisteban J.V.** et al., "*The superoutburst of the high-proper motion cataclysmic variable V1838 Aql: a bounce-back system?*", 2018, *MNRAS*, submitted.
- Rivera-Sandoval, L. E., **Hernández Santisteban J.V.**, N. Degenaar, R. Wijnands, C. Knigge, J. M. Miller, M. Reynolds, D. Altamirano, M. van den Berg & A. Hill, "*UV observations of the tMSPs XSS J12270-4859 and PSR J1023+0038 during their pulsar state*", 2017, *MNRAS*, accepted. arXiv:1708.07041
- van den Eijnden, J., Degenaar N., Pinto C., Patruno A., Wette K., Messenger C., **Hernández Santisteban J.V.** et al., "*The very-faint X-ray binary IGR J17062-6143: a truncated disk, no pulsations and a possible outflow*", 2017, *MNRAS*, in press. arXiv:1712.03949
- Shaw, A. W. and Charles, P. A. and Casares, J. and **Hernández Santisteban J.V.**, "*No evidence for a low-mass black hole in Swift J1753.5-0127*", 2016, *MNRAS*, 463, 1314.
- Gandhi, P., Littlefair, S. P., Hardy, L. K., Dhillon, V. S., Marsh, T. R., Shaw, A. W., Altamirano, D., Caballero-Garcia, M. D., Casares, J., Casella, P., Castro-Tirado, A. J., Charles, P. A., Dallilar, Y., Eikenberry, S., Fender, R. P., Hynes, R. I., Knigge, C., Kuulkers, E., Mooley, K., Muñoz-Darias, T. Pahari, M., Rahoui, F.; Russell, D. M.; **Hernández Santisteban J.V.**, Shahbaz, T., Terndrup, D. M., Tomsick, J. & Walton, D. J., "*Furiously Fast and Red: Sub-second Optical Flickering in V404 Cyg during the 2015 Outburst Peak*", 2016, *MNRAS*, 459, 554.
- Echevarría J., Michel R., A. Ramírez-Torres & **Hernández Santisteban J.V.**, "*A radial velocity study of the intermediate polar EX Hydrae*", 2016, *MNRAS*, 461, 1576.
- Michel R., Echevarría J. & **Hernández Santisteban J.V.**, "*Photometry of the eclipsing cataclysmic variable SDSS J152419.33+220920.0*", 2013, *A&A*, 554, 25, 4.
- Arellano Ferro A., Figuera Jaimes R., Giridhar Sunetra, Bramich D.M., **Hernández Santisteban J.V.**, Kuppuswamy K. , "*Exploring the variable stars in the globular cluster NGC 5024 (M53): New RR Lyrae and SX Phoenicis stars*", 2011, *MNRAS*, 416, 2265

### Conference Proceedings and Astronomer's Telegrams

- van den Eijnden, J., Degenaar, N., Russell, T., Wijnands, R., **Hernández Santisteban J.V.**, Sivakoff, G., Heinke, C., Miller-Jones, J., Bahramian, A., Maccarone, T., Kennea, J. A. & Knigge, C., "*VLA radio detection of the newly discovered transient and super-Eddington X-ray pulsar Swift J0243.6+6124*", 2017, The Astronomer's Telegram, 10946.
- **Hernández Santisteban J.V.**, "*New Spectroscopic and Photometric Observations of Cataclysmic Variable J0644+3344*", 2012, in The Golden Age of Cataclysmic Variables and Related Objects, F. Giovannelli & L. Sabau-Graziati (eds.), Mem. SAIt. 83 N.2.
- Farah A., González J.J., Sierra G., **Hernández J.V.** , et al., *Thermal Gradients Analysis for ESOPO Spectrograph*. In Ground-based and Airborne Instrumentation for Astronomy II, Proceedings of the SPIE, PAPER NO. 7014-255, Marseille, France., Presented at the Society of Photo-Optical Instrumentation Engineers (SPIE) Conference, 2008.

## Observing Programs

### Approved as Principal Investigator

- Hubble Space Telescope - DDT Cycle 24, "Characterising the global accretion inflow variability for PSR J1023+0038".
- NOAO Las Cumbres Observatory - 2017A, "Time-resolved photometry of sub-luminous X-ray binaries".
- Very Large Telescope/X-Shooter - Period 101A, "Detection of a sub-stellar donor in a metal-poor halo binary candidate".
- Very Large Telescope/X-Shooter - Period 99A, "Direct Detection of a sub-stellar donor star in an interacting binary".
- Very Large Telescope/X-Shooter - Period 96A, "V458 Vul: Is the nova inside a planetary nebula a Type Ia SN progenitor?".

### Approved as co-Principal Investigator

- XMM-Newton - AO-17, "The nature of the compact accretor in exotic X-ray binaries".
- Hubble Space Telescope - DDT Cycle 24, "The accretion flow and evolutionary history of an intriguing short-period black hole X-ray binary".
- Hubble Space Telescope - DDT Cycle 21, "Time-Resolved Ultraviolet Spectroscopy of the Missing Link Pulsar/LMXB PSR J1023".
- Very Large Telescope/X-Shooter - Period 101A, "Finding the counterpart of an elusive accreting neutron star to unravel its evolutionary history".
- Swift - Cycle 14, "Detecting an outburst of the Rapid Burster to identify its nIR counterpart".
- OAN/SPM - Cycle 2017B, "Follow-up of active compact binaries of long orbital periods".
- OAN/SPM - Ciclo 2017B-ToO, "Multi-wavelength follow-up *Swift-RATIR* of the dwarf nova candidate MASTER 075353.88+174907.6".
- Magellan/FIRE - 2018A, "Understanding accretion processes in neutron star X-ray binaries".