

# Jérôme Chenevez

## 1. Education and Academic Background

- 1996 Ph.D. in Earth sciences, University of Montpellier, France  
Thesis on the numerical modelling of magma chambers beneath fast-spreading mid-ocean ridges.
- 1993 M.Sc. in Astrophysics, University of Montpellier, France  
Thesis on a study of the pseudo-periodicity of Mira variable stars – 1 peer-reviewed publication.

## 2. Research Experience

### Astrophysics:

- 2019 – Associate Professor, Technical University of Denmark, DTU Space  
2009 - 2019 Senior Scientist, DTU Space  
2007 - 2009 Project Senior Scientist, DTU Space  
2005 - 2006 Scientist, Danish Spacecenter  
2002 - 2005 Project Scientist, Danish Space Research Institute

Study of the high-energy emission from neutron star and black hole X-ray binaries, including observational and theoretical investigations of thermonuclear X-ray bursts from accreting neutron stars. Investigation of nucleosynthesis on neutron stars and their physical condition (equation of state). Search with X-ray observatories for new X-ray transients and electromagnetic counterparts of gravitational wave events.

Principal Investigator (PI) of the *JEM-X* instrument onboard the ESA satellite *INTEGRAL*  
Management, operational support, data analysis and software development for the X-ray monitors *JEM-X*.

### Dynamic Meteorology:

- 1997 – 2002 Research scientist, Danish Meteorological Institute (DMI)  
Software development of Numerical Weather Prediction models for atmospheric transport. Implemented a machine learning system for the operational public forecasting of pollution episodes in Denmark and in Europe – 3 peer-reviewed publications.

### Geophysics:

- 1997 Postdoc at the department of geophysics, Niels Bohr Institute, University of Copenhagen.  
Project: “An advanced study of variations in the length of day” under mentoring of Prof. Klaus Mosegaard.
- 1993 – 1996 During my PhD, I developed a 2D Computational Fluid Dynamics simulation of fast-spreading mid-ocean ridges demonstrating the shaping of their magma chambers by the underneath Earth’s mantle convection flow – 2 peer-reviewed publications.

## 3. Teaching and Mentoring Experience

- Supervisor of HCØ COFUND postdoc Gaurava Jaisawal on “NEONS: a *NICER* view of neutron stars’ physics”, Sept. 2017 – Dec. 2019. Has led to a position for GJ as Researcher and now Senior Researcher at DTU Space.
- Main supervisor of PhD student Khaled Alizai on “*A study of neutron star's extreme physics with X-ray bursts*”, Dec. 2017 – Sept. 2021. Has resulted in a PhD thesis and 2 peer-reviewed publications.
- Co-supervisor of PhD student Hannah Wichern on “*Transient Astrophysics and Gravitational Waves*” – Oct. 2023
- Co-supervisor of PhD student Panagiotis Charalampopoulos on “*Tidal disruption of stars and extreme phenomena around compact objects*”, Sept. 2019 – Aug. 2022.
- Supervision of more than 50 bachelor and master student projects and theses.
- Responsible and lecturer for BSc and MSc courses at DTU: [30120](#), [30220](#), [30790](#), [30794](#) – See the attached teaching portfolio.
- Nominated for the DTU year’s teacher award 2014 by the student organisation “Polyteknisk Forening”.

#### 4. Leadership Experience

- Head of studies for the MSc programme “Earth & Space Physics and Engineering” (2020 – )  
Management and development of the MSc education programme: administration and coordination of the curriculum and study lines; student counselling and academic assessment; promotion to the labour market. Has increased by 50% the annual number of graduates with an employment rate of 98%.
- PI of the *JEM-X* instrument: lead the team composed of four scientists at DTU Space.
- Leader of the project “Compact Objects”, one of key research areas at DTU Space. With focus on X-ray observations of black holes and neutron stars, the project completes the life cycle of the space missions we contribute to.

#### 5. External Funding

- European Space Agency “Scientific Analysis, Operational and Calibration Support for INTEGRAL/JEM-X”, 4 M DKK for the JEM-X Team at DTU Space in 2021-2025. ESA-PRODEX Contract 4000134481
- European Space Agency “INTEGRAL JEM-X Support”, 1.1 M DKK in 2020-21, ESA Contract 4000130343
- Danish Government Scholarship for a postdoctoral position at the University of Copenhagen, granted by the Danish Ministry of Education (1997)

#### 6. Memberships of scientific committees, reviews

- Active member of the INTEGRAL User Group (Advisory Board of the *INTEGRAL* mission)
- Management Committee representative for Denmark in COST Action CA16214 “PHAROS”, 2017-2021
- Management Committee substitute for Denmark of COST Action MP1304 “NewCompStar”, 2013 -2017
- Member of the Target Allocation Committee for INTEGRAL, 2015-2016.
- Reviewer for the Science & Technology Facility Council, UK Research and Innovation, 2016-2017
- Reviewer for the Swedish National Space Board, 2015
- Article reviewer for diverse scientific journals (MNRAS, PASJ, Adv. Space Res., etc.)
- External examiner for bachelor and master student projects, Universities of Copenhagen, Århus, and Ålborg.
- External referee for the PhD thesis of Wenjin Xie at CEA Saclay, Université of Paris Cité, April 2024.

#### 7. Collaborations and Networking (start years)

- 2022 – LISA Consortium : Laser Interferometer Space Antenna, ESA & NASA future space mission
- 2019 – INTEGRAL collaboration for Multi Messenger Astronomy, ISDC, University of Geneva, Switzerland
- 2018 – INTEGRAL Science Operations Centre at ESAC, Spain, for *INTEGRAL/JEM-X* support
- 2018 – Science Team member of the future mission *STROBE-X* proposed to NASA.
- 2017 – Dk representant in *PHAROS*, COST Action “*Multi-messenger physics and astrophysics of neutron stars*”
- 2016 – Science Team member of the future Chinese-European mission *eXTP*
- 2013 – Co-Investigator and full Science Team member of the NASA mission *NICER*
- 2013 – Dk representant in *NewCompStar*, COST European network for research on neutron stars
- 2011 – Science Study Team of the *LOFT* mission proposed to ESA.
- 2010 – Science Team member of the *NuSTAR* Galactic working group
- 2010 – Member and co-Investigator of the International Space Science Institute (Bern) Teams on “Nuclear reactions in superdense matter” (2015-2017), “Mapping neutron stars with type I X-ray bursts” (2012-2014), and “Thermonuclear bursts” (2010-2012)
- 2008 – Danish representant and co-founder of the “Multi-INstrument Burst ARchive” (*MINBAR*) collaboration (Coordinator: D. Galloway, Monash, Australia).
- 2006 – Lead Proposer for the successful “*Monitoring of Long X-ray Bursts with INTEGRAL*” (ESA-*INTEGRAL* Announcements of Opportunity AO-4 – AO-20)
- 2002 – Collaborator of the International Science Data Centre (ISDC), University of Geneva, Switzerland.
- 2002 – Member of the *JEM-X* instrument team for the *INTEGRAL* ESA satellite

## 8. Professional Development

- Educated in university teaching and pedagogy; supervision of PhD, and larger projects.
- Attended in 2023 advanced training workshops in data analysis techniques for gravitational wave signal processing and interpretation in preparation to the LISA space mission.

## 9. Scientific Communication and Outreach

108 papers in peer-reviewed international publications (>10,000 citations in refereed journals), 11 as first author. 200+ Astronomer's Telegrams, circulars, proceedings, etc. (>1000 citations in peer-reviewed journals). H-index: 24 (Web of Science, Scopus); 26 (SAO/NASA [Astrophysics Data System](#) metrics)  
Outreach activities for the scientific promotion of astronomy in the general public and at schools: public conferences in Denmark, e.g. for *ForskningensDøgn* and the Science Festival. Interviews in popular media.

### Selected publications (more than 300 in total, including 100+ peer-reviewed) ORCID 0000-0002-4397-8370

Mereghetti S., ..., **Chenevez J. et al.** (33 authors): A magnetar giant flare in the nearby starburst galaxy M82, *Nature*, Volume 629, Issue 8010, p.58-61, April 2024 ([arXiv:2312.14645](#))

Alizai K., **Chenevez J. et al.** (11 authors) 2023 : A catalogue of unusually long thermonuclear bursts on neutron stars, *Monthly Notices of the Royal Astronomical Society*, vol. 521, pp. 3608-3624 ([arXiv:2308.03499](#))

Alizai K., **Chenevez J.**, Brandt S., Lund N. 2020 : A catalog of intermediate duration Type I X-ray bursts observed with the *INTEGRAL* satellite, *Monthly Notices of the Royal Astronomical Society*, vol. 494, pp. 2509-2522 ([arXiv:2003.09324](#))

Galloway D., in 't Zand J., **Chenevez J. et al.** (7 authors) 2020 : The Multi INstrument Burst ARchive (MINBAR). *The Astrophysical Journal Supplement Series*, vol. 249, 32 ([arXiv:2003.00685](#))

Jaisawal G.K., **Chenevez J. et al.** (15 authors) 2019 : *NICER* observes a secondary peak in the decay of a thermonuclear burst from 4U 1608-52, *The Astrophysical Journal* 883, 61 ([arXiv:1908.03373](#))

Nowak M.A., Paizis A., Jaisawal G. K., **Chenevez J. et al.** (4 authors) 2019 : *Chandra*-HETGS Characterization of an Outflowing Wind in the accreting millisecond pulsar IGR J17591-2342, *The Astrophysical Journal* 874, 69 ([arXiv:1902.09577](#))

Keek L., Arzoumanian Z. , Chakrabarty D. , **Chenevez J. et al.** (12 authors) 2018 : *NICER* Detection of Strong Photospheric Expansion during a Thermonuclear X-Ray Burst from 4U 1820-30, *The Astrophysical Journal Letters* 856, L37 ([arXiv:1808.06442](#))

Galloway D.K., in 't Zand J.J.M., **Chenevez J. et al.** (7 authors) 2018 : The Influence of Stellar Spin on Ignition of Thermonuclear Runaways, *The Astrophysical Journal Letters* 857, L24 ([arXiv:1804.03380](#))

Jaisawal G.K., Naik S., **Chenevez J.** 2018 : Understanding the spectral and timing behavior of a newly discovered transient X-ray pulsar Swift J0243.6+6124, *MNRAS* 474, pp. 4432-4437 ([arXiv:1711.09813](#))

Savchenko V., Ferrigno C., Kuulkers E., ... **Chenevez J. et al.** (19 authors) 2017 : *INTEGRAL* Detection of the First Prompt Gamma-Ray Signal Coincident with the Gravitational-wave Event GW170817, *The Astrophysical Journal Letters*, vol. 848, L15 ([arXiv:1710.05449](#))

**Chenevez J.**, Galloway D., in 't Zand J. et al. (12 authors) 2016 : A soft X-ray episode for the Clocked Burster GS 1826-24 as measured by *Swift* and *NuSTAR*. *The Astrophysical Journal* 818, 135 ([arXiv:1509.01248](#))

**Chenevez J.**, Altamirano D., Galloway D. et al. (8 authors) 2011 : Puzzling thermonuclear burst behaviour from the transient low-mass X-ray binary IGR J17473-2721. *MNRAS*, vol. 410, p.179 ([arXiv:1007.5201](#))

**Chenevez J.**, Falanga M., Kuulkers E. et al. (6 authors) 2007 : IGR J17254-3257, a new bursting neutron star, *Astronomy and Astrophysics*, Volume 469, pp.L27-L30 ([arXiv:0705.1249](#))

**Chenevez J.**, Falanga M., Brandt S., et al. (6 authors) 2006 : Two-phase X-ray burst from GX 3+1 observed by *INTEGRAL*. *Astronomy & Astrophysics*, vol. 449, p. L5 ([arXiv:0512559](#))

## Teaching portfolio (short version)

I have built and developed from scratch the following advanced courses in Astrophysics with innovative teaching methods including the use of digital platforms for hands-on activities.

[30120](#) *Astrofysik* (BSc) : 13-week course (5 ECTS) every Spring semester since 2013.

Course responsible and provider of 8-10 lectures taught in danish, including astronomy, stellar physics and evolution, our galaxy the Milky Way. Students assessment through group presentations, quizzes and an oral examination.

The course has been mandatory for 2<sup>nd</sup> semester students of the BSc in "*Geofysik og Rumteknologi*". From Spring 2025, the course ([30121](#)) will still be mandatory, but taught in english at the 4<sup>th</sup> semester.

[30790](#) *Observational X-ray Astrophysics* (MSc): 13-week course (5 ECTS) every Autumn semester since 2013.

Course responsible and provider of 8-9 lectures covering the astrophysics of X-ray radiation, observations of supernovae, white dwarfs, neutron stars and X-ray binaries. Students assessment through scientific paper presentations, exercises, and an oral examination. From Autumn 2024, the course evolves to [30791](#).

[30794](#) *Astrophysical Data Analyses* (MSc): 13-week course (5 ECTS) every Spring semester since 2020.

Course responsible and provider of four lectures including the Linux command line system and hands-on analysis of X-ray observational data from the INTEGRAL/JEM-X, NuSTAR, NICER, and Swift instruments. Students assessment through one report and oral examination.

### Other courses:

- [30110](#) *Project work - Earth and Space Physics and Engineering* (BSc) : project course (10 ECTS) mandatory at the 4<sup>th</sup> semester of BSc in "*Geofysik og Rumteknologi*".

Project provider (since 2013) and coming course responsible (from Spring 2025).

- [30220](#) *Synthesis in Earth and Space Physics* (MSc) : project course (10 ECTS) mandatory for ESPE MSc.

Course responsible (since 2020) and provider of projects.

- [30780](#) *Observational challenges in Astrophysics* (BSc+MSc): 13-week course (5 ECTS), Spring 2012.

Course responsible and lecturer.

- [30930](#) *Hands-on X-ray astronomy data analysis* (PhD): 3-week January course (5 ECTS), 2020.

Course responsible and lecturer.

- [30200](#) *Measurement Technologies in Earth and Space Physics* (MSc) : one lecture in September 2012.

- [30210](#) *Data processing methods in Earth and Space Physics* (MSc): one-day teaching in January 2013+2014.

- Guest lecturer in astrophysics for the course "*Compact objects*" at the Niels Bohr Institute, University of Copenhagen, 2010-2012 (course responsables: Thomas Tauris & Anja C. Andersen).