

# Curriculum vitae (updated December 21<sup>st</sup> 2021)

## Raphaël Duque

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### RESEARCH INTERESTS

Gamma-ray bursts, relativistic jets, multi-messenger astronomy, compact binary coalescences, high-energy radiation processes

### EDUCATION

- 2018 – 2021 PhD in Astronomy and astrophysics at *Sorbonne Université*. Doctoral thesis entitled<sup>1</sup> “Compact object coalescences and gamma-ray bursts in the gravitational-wave era”, prepared under the advisory of Frédéric Daigne et Robert Mochkovitch at the *Institut d’astrophysique de Paris*, defended in Paris on September 10<sup>th</sup> 2021.
- 2017 – 2018 Master’s degree in Astronomy, astrophysics and space engineering at *Université Paris-Diderot (cum laude)*. Research internship at the *Institut d’astrophysique de Paris* on “The afterglow of the august-17-2017 binary neutron star merger multi-messenger event”.
- 2014 – 2017 *École polytechnique* multi-disciplinary diploma. Specialization in physics, research internship at the European Gravitational Observatory (Virgo interferometer, Pisa) on the simulation of Gaussian laser beams.

### PROFESSIONAL EXPERIENCE

- since 2021 Post-doctoral researcher at *Goethe Universität Frankfurt-am-Main*. Member of advanced ERC project *JETSET* (PI: Prof. Luciano Rezzolla, Institute for Theoretical Physics).

### TEACHING

- since 2021 Tutorials in Master’s course “Introduction to astrophysics” at *Goethe Universität Frankfurt-am-Main* (in English, 48 hETD/year).
- 2018 – 2021 Tutorials and practical sessions in Master’s degree in Astronomy and Astrophysics, *Observatoire de Paris-Meudon*: Courses “Statistical Physics”, “Astronomical Data Analysis”, “Astronomical Instrumentation and Observations”.
- 2018 – 2021 Public courses in General Astronomy for the *Explorer et comprendre l’Univers* curriculum of the *Observatoire de Paris-Meudon*.

### RESPONSIBILITIES AND OTHER ACTIVITIES

- since 2021 Member of the Observational Science Board of 3<sup>rd</sup>-generation interferometer project Einstein Telescope (div. 4: multi-messenger observations).
- since 2021 Publication refereeing (MNRAS, 1 article).
- since 2019 Burst advocate for the high-energy astronomy satellite mission *SVOM*.
- 2018 – 2021 Project lead and developer of **astro-reduce**, an astronomical image-reduction software.
- 2018 – 2019 Co-organiser of multi-messenger astronomy journal-club between *Institut d’astrophysique de Paris* and *Astroparticules et cosmologie* laboratories (Paris).

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<sup>1</sup>The manuscript can be retrieved at the following address: [https://bandang0.github.io/rduqueonline/docs/PGRBGWE211001\\_archive.pdf](https://bandang0.github.io/rduqueonline/docs/PGRBGWE211001_archive.pdf).

#### INVITED SEMINARS

November 2021	<i>Goethe Universität</i> (Frankfurt)
November 2020	TAPIR at Caltech (Pasadena)
November 2020	Hebrew University (Jerusalem)
October 2020	Columbia University (New York City)
October 2020	Grandma Collaboration astrophysics seminar (Paris)
October 2020	<i>Osservatorio Astronomico di Brera</i> (Milan)
September 2020	Jagiellonian University (Cracow)
August 2018	Kavli Institute for Astronomy and Astrophysics & National Astronomical Observatory of China (Beijing)

#### CONFERENCE CONTRIBUTIONS

March 2021	National “Multi-messenger astrophysics” Group meeting (Paris).
October 2020	General Assembly of National Gravitational-Waves Working Group (Paris).
December 2019	Texas Symposium (Portsmouth): Prize for best student talk in the “X-ray messenger” session.
May 2019	Nanjing GRB Conference and <i>SVOM</i> workshop (Nanjing).
March 2019	Asterics Radioastronomy Conference (Groningen).
October 2018	Eighth Fermi Symposium (Baltimore, poster).
2018–2021 (yearly)	“Elbereth” conference by astronomy and astrophysics graduate students in the Paris Area (Paris).

## Appendix: Complete list of publications<sup>2</sup>

### Publications (refereed)

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MNRAS (soumis)	<i>Flares in gamma-ray burst X-ray afterglows as prompt emission from slightly misaligned structured jets</i> <b>Duque, R.</b> ; Beniamini, P. ; Daigne, F ; Mochkovitch R.
A&A 652 (2021)	<i>The potential role of binary neutron star merger afterglows in multimessenger cosmology</i> Mastrogiovanni, S. ; <b>Duque, R.</b> ; Chassande-Mottin, E. ; Daigne, F. ; Mochkovitch, R.
A&A 651 (2021)	<i>Prospects for kilonova signals in the gravitational-wave era</i> Mochkovitch, R. ; Daigne, F. ; <b>Duque, R.</b> ; Zitouni, H.
A&A 639 (2020)	<i>Probing high-density neutron star mergers with afterglow counterparts</i> <b>Duque, R.</b> ; Beniamini, P. ; Daigne, F. ; Mochkovitch R.
MNRAS 492 (2020)	<i>X-ray plateaus in gamma-ray bursts’ light curves from jets viewed slightly off-axis</i> Beniamini, P. ; <b>Duque, R.</b> ; Daigne, F ; Mochkovitch R.
A&A 631 (2019)	<i>Radio afterglows of binary neutron star mergers: a population study for current and future gravitational-wave observing runs</i> <b>Duque, R.</b> ; Daigne, F. ; Mochkovitch, R.

### Publications (other)

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GCN 26386 (2019)	<i>LIGO/Virgo S191205ah: no counterpart candidate in SVOM/GWAC observations</i> Dornic, D. ; Han, X. ; Gotz, D. ; Mao, J. R. ; Sun, S. S. ; <b>Duque, R.</b>
PoS 357 (2019)	<i>Neutron star merger afterglows: population prospects for the gravitational-wave era</i> <b>Duque, R.</b> ; Daigne, F. ; Mochkovitch, R.

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<sup>2</sup>This list can also be retrieved at the following address: <https://ui.adsabs.harvard.edu/user/libraries/xb2x2Cr4Q1uZ069nbnda6g>.