

Ileyk El Mellah
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French citizen

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Education

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| 2013-16 | PhD supervised by Fabien Casse & Andrea Goldwurm on
<i>Numerical simulations of wind accretion onto compact bodies</i>
AstroParticule & Cosmology laboratory (APC) – Univ. of Paris 7 Diderot |
| 2012-13 | Master degree in Astrophysics – Observatory of Paris
Obtained with distinction |
| 2010-12 | Normalien at the <i>Ecole Normale Supérieure</i> of Cachan |
| 2011-12 | Research internship and graduate courses – MIT, Cambridge |
| 2010-11 | French <i>Agrégation</i> of Physics & Chemistry – ENS of Cachan, FR
Rank : 2 nd in 1,409 candidates |
| 2008-10 | Bachelor degree in Fundamental Physics – ENS / Paris 6 University
Obtained with honours |
| 2006-08 | Preparatory classes to <i>Grandes Ecoles</i> – Lycée Janson-de-Sailly, Paris |

Research

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| Since 2016 | FWO [Pegasus]² Marie Skłodowska-Curie fellowship
under the supervision of Rony Keppens
Center for mathematical Plasma Astrophysics – KU Leuven |
| 2013-16 | PhD thesis supervised by Fabien Casse & Andrea Goldwurm on
<i>Numerical simulations of wind accretion onto compact bodies</i>
APC – Univ. of Paris 7 Diderot |
| 2011-12 | One-year internship supervised by Saul Rappaport on
<i>Monitoring of close-in binary stars and short period exoplanets</i>
Data analysis and models of light curves from the Kepler satellite
Kavli Institute for Astrophysics – MIT |
| Ap–Ag 2010 | Internship supervised by Jean-François Lestrade on
<i>Gravitational perturbations of debris discs by a passing-by star</i>
LESIA – Paris Observatory |
| Jn–Jl 2009 | Internship supervised by Gérard Belmont & Patrick Robert on
<i>Resampling of the CLUSTER satellites data</i>
Plasma Physics Laboratory – Vélizy |

Communications

Peer-reviewed publications

- [3] Xia C., Teunissen J., **El Mellah I.**, Chané E. & Keppens R.
MPI-AMRVAC 2.0 for solar and astrophysical applications (2018) - ApJS
- [1] **El Mellah I.**, Sundqvist J. O. & Keppens R.
Accretion from a clumpy massive-star wind in Supergiant X-ray binaries (2018)
MNRAS
- [2] Grinberg V., Hell N., **El Mellah I.**, Neilsen J., Sander A. A. C., Leutenegger M. A.,
Fürst F., Huenemoerder D. P., Kretschmar P., Kühnel M., Martínez-Núñez S.,
Niu S., Pottschmidt K., Schulz N. S., Wilms J. & Nowak M. A.
The clumpy absorber in the high mass X-ray binary Vela X-1 (2017) - A&A
- [4] **El Mellah I.** & Casse F.
*A numerical investigation of wind accretion in persistent Supergiant X-ray Binaries
I - Structure of the flow at the orbital scale* (2017) - MNRAS
- [5] **El Mellah I.** & Casse F.
*A numerical simulations of axisymmetric hydrodynamical Bondi-Hoyle accretion
on to a compact object* (2015) - MNRAS
- [6] Sanchis-Ojeda R., Rappaport S., Winn J., Kotson M., Levine A., **El Mellah I.**
The shortest-period planets found with Kepler (2014) - ApJ
- [7] Rappaport S., Deck K., Levine A., Borkovits T., Carter J., **El Mellah I.**, Sanchis-Ojeda R.,
Kalomeni B.
Triple-star candidates among the Kepler binaries (2013) - ApJ
- [8] Rappaport S., Levine A., Chiang E., **El Mellah I.**, Jenkins J., Kalomeni B., Kite E. S.,
Kotson M., Nelson L., Rousseau-Nepton L., Tran K.
Possible disintegrating short-period super-Mercury orbiting KIC 12557548 (2012) - ApJ

Proceedings and PhD manuscript

- [9] **El Mellah I.**, Sundqvist J. O. & Keppens R.
Clumpy wind accretion in Supergiant X-ray binaries (2017) - SF2A
- [10] **El Mellah I.**
Wind accretion onto compact objects (2017) - PhD manuscript
- [11] **El Mellah I.** & Casse F.
Numerical simulations of Bondi-Hoyle accretion onto a compact object (2015) - SF2A

Communications

Conferences

Oc 2018	Leuven-Amsterdam-Bonn massive stars meeting
Ag 2018	IAU General Assembly - High Mass X-ray Binaries symposium
Sp 2017	KU Leuven - Frontiers of Astrophysical Modeling
Ag 2017	Köln - Numerical techniques in MHD simulations
Jl 2017	Paris - French Astronomy Society meeting
Mr 2017	Brussels Royal Observatory - CHARM meeting
Fb 2017	ISSI Bern workshop - Stellar Winds in Massive X-ray Binaries
Sp 2016	Arbatax - Super-Eddington accretion on compact objects
My 2016	Les Houches - International school of Computational Astrophysics
Jn 2015	Toulouse - French Astronomy Society meeting
Mr 2015	Les Houches - Turbulence, magnetic fields and self organization

Seminars

Nv 2018	IRAP Toulouse
Jl 2018	Caltech TAPIR
Fb 2018	LUPM Montpellier
Dc 2017	Radboud University Nijmegen
Nv 2017	ESAC Madrid
Sp 2017	Observatory of Paris
Sp 2016	Aarhus University
Ap 2016	Paris 7 University
Ap 2016	KU Leuven
Oc 2015	CEA Paris, AIM laboratory

Posters

Jl 2018	Formation of wind-captured discs in high mass X-ray binaries COSPAR - Pasadena
Jn 2017	Clumpy wind accretion in Supergiant X-ray binaries EWASS - Prague
Dc 2015	Numerical simulations of wind accretion onto compact objects Texas symposium - Geneva
Nv 2014	Numerical simulations of wind accretion undergoing flip-flop instability IAP - Paris

Teaching & outreach

Supervision

- 2018-... Co-supervisor with Jon Sundqvist of graduate student Nicolas Moens
- 2018 Reader for Florian Driessen's Master thesis supervised by Jon Sundqvist
- 2018 Reader for Prem Kumar Bulusu's Master thesis supervised by Hugues Sana

Teaching

- 2016-19 Computational methods for Astrophysical applications, 5th year - KU Leuven
- 2017-18 Linear Algebra, 1st year - KU Leuven
- 2014-16 Classical Mechanics, 1st year - Univ. of Paris 7 Diderot
- 2013 Physics for Medical studies, 1st year - Univ. of Paris 7 Diderot
- 2013 Deterministic systems and signals, 4th year - Univ. of Paris 7 Diderot
- 2012-13 Private lessons with the company *Cours Thalès* - Paris
- 2011 French *Agrégation* of Physics & Chemistry
- 2009-10 Teaching assistant at the high school Gustave Eiffel - Cachan

Outreach

- Oc 2017 Radio show *Faconde* on scientific outreach - Brussels
- Ap-Nv 2015 Community manager of the Young Physicists Meeting - Paris
- Oc 2015 Festival of Science - Univ. of Paris 7 Diderot
- Sp 2015 Wolfram demonstration on the ballistic motion in a Roche potential and 3D-printing of the corresponding surfaces - APC
- 2013 Java applet on Turing theory of morphogenesis - Paris Observatory

Grants & awards

- 2017 Computing time on the Tier-1 VSC cluster : 1 Mh-CPU
- 2016 3-years FWO [Pegasus]² Marie Skłodowska-Curie fellowship
- 2016 Computing time on the CINES cluster : 300 kh-CPU
- 2015 Computing time on the CINES cluster : 300 kh-CPU
- 2013 3-years PhD fellowship from the Ecole Normale Supérieure of Cachan
- 2013 3-years teaching assistant grant from the Université of Paris 7 Diderot
- 2012 1-week observing time at the Mont Mégantic Observatory (Canada)
- 2011 French *Agrégation* of Physics and Chemistry - Rank : 2nd / 1,409
- 2010 2-years fellowship from the ENS of Cachan as a *normalien*

Selected skills

Programming languages

Fortran, C, C++, **Python**, Idl, Java, Perl, XML, **Csh**, Bash, **HTML**, **CSS**, JavaScript, CoffeeScript, HTML5

Codes & softwares

MPI-AMRVAC, Mathematica, VisIt, Paraview, Vampir, VampirTrace, Atom, Emacs, Pyke, Inkscape, Gnuplot, DS9

Data analysis

Extended Fourier and wavelet analysis, resampling and interpolation of time/space series

Languages

French (native), English (fluent), Italian (B1)

