

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 |

Peer-reviewed publications

- [1] El Mellah I., Sundqvist J. O. & Keppens R.
Accretion from a clumpy massive-star wind in Supergiant X-ray binaries (2017)
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
- [3] Xia C., Teunissen J., El Mellah I., Chané E. & Keppens R.
MPI-AMRVAC 2.0 for solar and astrophysical applications (2017) - ApJ Supplement Series
- [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* (2016) - 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

Oral contributions^a

Jl 2018	Caltech – seminar*
Ja 2018	Laboratoire Univers et Particules de Montpellier – seminar*
Dc 2017	Radboud University Nijmegen – seminar*
Nv 2017	ESAC (Madrid) – seminar*
Sp 2017	Observatory of Paris – seminar*
Sp 2017	KU Leuven – Frontiers of Astrophysical Modeling
Ag 2017	Köln – Numerical techniques in MHD simulations
Jl 2017	Paris – Journées de la SF2A
Mr 2017	Brussels Royal Observatory – CHARM meeting
Sp 2016	Arbatax – Super-Eddington accretion on compact objects
Sp 2016	Aarhus University – seminar*
Ap 2016	Paris 7 University – seminar*
Ap 2016	KU Leuven – seminar*
Oc 2015	AIM laboratory (CEA, Paris) – Computational Astrophysics meeting
Jn 2015	Toulouse – Journées de la SF2A
Mr 2015	Ecole des Houches – Turbulence, magnetic fields and self organization

Posters

Jn 2017	Clumps and shearing in Supergiant X-ray binaries COSPAR 42 nd Scientific Assembly – 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

^aThe stars indicate an invited talk.

Teaching & outreach

Teaching

2018-19	Computational methods for Astrophysics, 5 th year – KU Leuven
2017-18	Linear Algebra, 1 st year – KU Leuven
2016-17	Computational methods for Astrophysics, 5 th year – KU Leuven
2014-16	Classical Mechanics, 1 st year – Univ. of Paris 7 Diderot
2013	Physics for Medical studies, 1 st year – Univ. of Paris 7 Diderot
2013	Deterministic systems and signals, 4 th year – Univ. of Paris 7 Diderot
2012-13	Private lessons with the company <i>Cours Thalès</i> – Paris
2011	French <i>Agrégation</i> of Physics & Chemistry
2009-10	Teaching assistant at the high school Gustave Eiffel – Cachan

Outreach

Oc 2017	Radio show <i>Faconde</i> 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] ¹² 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 <i>Agrégation</i> of Physics and Chemistry - Rank : 2 nd / 1,409
2010	2-years fellowship from the ENS of Cachan as a <i>normalien</i>

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)

