

## Ileyk EL MELLAH

born on 5<sup>th</sup> April, 1989

French citizen

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### Education

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

### Research

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Since 2013	<b>PhD thesis supervised by Fabien CASSE &amp; Andrea GOLDWURM on <i>Numerical simulations of wind accretion onto compact bodies</i></b> APC - Univ. of Paris 7 Diderot
2011-12	<b>One-year internship supervised by Saul RAPPAPORT on <i>Monitoring of close-in binary stars and short period exoplanets</i></b> Data analysis and models of light curves from the Kepler satellite Kavli Institute for Astrophysics - MIT
Ap-Ag 2010	<b>Internship supervised by Jean-François LESTRADE on <i>Gravitational perturbations of debris discs by a passing-by star</i></b> LESIA - Paris Observatory
Jn-Jl 2009	<b>Internship supervised by Gérard BELMONT &amp; Patrick ROBERT on <i>Resampling of the CLUSTER satellites data</i></b> Plasma Physics Laboratory - Vélizy

## Communications

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### Peer-reviewed publications

- [1] **I. EL MELLAH** & F. CASSE  
*A numerical investigation of wind accretion in persistent Supergiant X-ray Binaries I - Structure of the flow at the orbital scale* (2016) - under reviewing
- [2] **I. EL MELLAH** & F. CASSE  
*A Numerical simulations of axisymmetric hydrodynamical Bondi-Hoyle accretion on to a compact object* (2015) - MNRAS 454 (3): 2657-2667
- [3] R. SANCHIS-OJEDA, S. RAPPAPORT, J. WINN, M. KOTSON, A. LEVINE, **I. EL MELLAH**  
*The Shortest-period Planets Found with Kepler* (2014) - ApJ, vol. 787:1 18pp - 29 cit.
- [4] S. RAPPAPORT, K. DECK, A. LEVINE, T. BORKOVITS, J. CARTER, **I. EL MELLAH**, R. SANCHIS-OJEDA, B. KALOMENI  
*Triple-star Candidates among the Kepler Binaries* (2013) - ApJ, vol. 768:1 18pp - 57 cit.
- [5] S. RAPPAPORT, A. LEVINE, E. CHIANG, **I. EL MELLAH**, J. JENKINS, B. KALOMENI, E. S. KITE, M. KOTSON, L. NELSON, L. ROUSSEAU-NEPTON, K. TRAN  
*Possible Disintegrating Short-Period Super-Mercury Orbiting KIC 12557548* (2012) ApJ, vol. 752:1 13pp - 72 cit.

### Oral contributions

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|---------|---|
| Sp 2016 | <b>Super-Eddington accretion on compact objects</b><br>Arbatax conference center - 20' talk                                     |
| Ag 2016 | <b>Monthly Astrophysics seminar</b><br>Department of Physics and Astronomy, Aarhus University - 50' invited talk                |
| Ap 2016 | <b>Weekly High Energy Astrophysics seminar</b><br>APC laboratory - 40' invited talk   |
| Ap 2016 | <b>Monthly CmAP seminar</b><br>KU Leuven, Center for mathematical Plasma Astrophysics - 50' invited talk                        |
| Oc 2015 | <b>Monthly Computational Astrophysics seminar</b><br>CEA Saclay, SAp, AIM laboratory - 50' invited talk                         |
| Jn 2015 | <b>Journées de la SF2A</b> - Toulouse - 20' talk<br><i>The proceedings of the 2015 Journées de la SF2A</i>                      |
| Mr 2015 | <b>Ecole des Houches : Turbulence, magnetic fields and self organization in laboratory and astrophysical plasmas</b> - 20' talk |

### Informal talks

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| Oc 2015 | <b>Graduate students workshop on the Atom code editor</b> - APC |
| Ap 2015 | <b>APC grad day</b> - APC                                       |

## Communications

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Mr 2015	<b>Weekly graduate students seminar - The minority game &amp; <i>The hipster effect</i> article by J. TOUBOUL - APC</b>
Dc 2014	<b>The Elbereth conference - Paris - 20' talk</b>
Nv 2014	<b>FACe Journal Club - Anomalous hysteresis cycles in BH-LMXB FACe, Paris 7</b>
Jn 2014	<b>FACe JC - The spin of Cygnus X-1's BH candidate - FACe, Paris 7</b>
Jn 2014	<b>APC grad day - APC</b>
Mr 2014	<b>Weekly graduate students seminar - Numerical cognition : counting without fingers - APC</b>
Nv 2013	<b>High energy group seminar - Instabilities in accretion discs - APC</b>
My 2012	<b>MKI Journal Club - <i>In-situ accretion of H-rich atmospheres on short-period super Earths</i> by M. Ikoma &amp; Y. Hori (12) - MKI, MIT</b>

## Teaching & outreach

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### Teaching

2014-15	Classical Mechanics, 1 <sup>st</sup> year - Univ. of Paris 7 Diderot
2013	Physics for Medical studies, 1 <sup>st</sup> year - Univ. of Paris 7 Diderot
2013	Deterministic systems and signals, 4 <sup>th</sup> 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

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's theory of morphogenesis - Paris Observatory

## Grants & awards

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2016	Computing time on the CINES clusters : 300 kh·CPU
2015	Computing time on the CINES clusters : 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 <sup>nd</sup> / 1,409
2010	2-years fellowship from the ENS of Cachan as a <i>normalien</i>

## Conferences & schools

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- Sp 2016    **Super-Eddington accretion on compact objects** - Arbatax, IT  
Talk
- My 2016    **6<sup>th</sup> Les Houches school in Numerical Physics** - Les Houches, FR  
Poster
- Dc 2015    **28<sup>th</sup> Texas symposium on Relativistic Astrophysics** - Geneva, SW  
Poster
- Jn 2015    **Journées de la Société Française d'Astronomie et d'Astrophysique**  
Toulouse, FR - 20' talk
- Mr 2015    **Ecole des Houches : Turbulence, magnetic fields and self organization  
in laboratory and astrophysical plasmas** - Les Houches, FR - 20' talk
- Nv 2014    **Magnetic fields from the Sun to black holes,  
in memory of Jean Heyvaerts** - Paris, FR - Poster
- Sp 2014    **The many faces of compact stars, the newComp star school**  
Barcelona, SP
- Jn 2014    **Journées de la SF2A** - Paris, FR
- My 2013    **International Cargese school on cosmic accelerators** - Cargese, FR

## Selected skills

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### 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)