

Ileyk El Mellah
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Research

- Since 2016 **FWO [Pegasus]² Marie Skłodowska-Curie fellowship with Rony Keppens**
Center for mathematical Plasma Astrophysics – KU Leuven
- 2013-16 **PhD with Fabien Casse & Andrea Goldwurm** – Paris Diderot University
Wind accretion onto compact bodies
- 2011-12 **One-year volunteer internship supervised by Saul Rappaport on**
Monitoring of close-in binaries and short period exoplanets with Kepler
Kavli Institute for Astrophysics – MIT
- Ap-Ag 2010 **BSc internship supervised by Jean-François Lestrade on**
Gravitational perturbations of debris discs by a passing-by star
LESIA – Paris Observatory
- Jn-Jl 2009 **BSc internship supervised by Gérard Belmont & Patrick Robert on**
Resampling of the CLUSTER satellites data
Plasma Physics Laboratory – Paris

Education

- 2013-16 **PhD with Fabien Casse & Andrea Goldwurm** – Paris Diderot University
Wind accretion onto compact bodies
- 2012-13 **Master degree in Astrophysics, with distinction** – Paris Observatory
- 2010-12 **Normalien at the *Ecole Normale Supérieure* of Cachan**
- 2011-12 **Research internship and graduate courses** – MIT, Cambridge
- 2010-11 **French *Agrégation* of Physics & Chemistry** – ENS of Cachan, FR
Rank : 2nd
- 2008-10 **Bachelor degree in Fundamental Physics, with honours** – ENS
- 2006-08 **Preparatory classes to *Grandes Ecoles*** – Lycée Janson-de-Sailly, Paris

Communication

Conferences

- Jn 2019 European Week of Astronomy and Space Science - Lyon, Fr
- Fb 2019 12th INTEGRAL conference - Geneva, SW
- Oc 2018 Stellar Winds in Massive X-ray Binaries workshop - Santander, SP
- Oc 2018 Leuven-Amsterdam-Bonn massive stars meeting - Leuven, BE
- Ag 2018 IAU General Assembly - High Mass X-ray Binaries symposium - Vienna, AT
- Jl 2018 COSPAR Assembly - Pasadena, US
- Jn 2018 Belgium FNRS meeting - Brussels, BE
- Sp 2017 Frontiers of Astrophysical Modeling - Leuven, BE
- Ag 2017 Numerical techniques in MHD simulations - Cologne, DE
- Jl 2017 French Astronomy Society meeting - Paris, FR
- Jn 2017 European Week of Astronomy and Space Science - Prague, CZ
- Mr 2017 CHARM meeting - Brussels, BE
- Fb 2017 Stellar Winds in Massive X-ray Binaries workshop - ISSI Bern, SW
- Oc 2016 CHARM meeting - Ghent, BE
- Sp 2016 Super-Eddington accretion on compact objects - Arbatax, IT
- My 2016 International school of Computational Astrophysics - Les Houches, FR
- Dc 2015 Texas symposium - Geneva, SW
- Jn 2015 French Astronomy Society meeting - Toulouse, FR
- Mr 2015 Turbulence, magnetic fields and self organization - Les Houches, FR
- Nv 2014 Magnetic fields from the sun to black holes - Paris, FR
- My 2013 Cosmic Accelerators - Institute for scientific studies - Cargèse, FR

Seminars

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

Posters

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

Grants & awards

- 2016 3-years FWO [Pegasus]² Marie Skłodowska-Curie fellowship
- 2013-16 3-years PhD fellowship from the Ecole Normale Supérieure of Cachan
- 2013-16 3-years teaching assistant grant from the Université of Paris 7 Diderot
- 2011 French *Agrégation* of Physics and Chemistry - Rank : 2nd
- 2010-12 2-years *normalien* study fellowship from the ENS of Cachan

Computing & observing time

2018	Mapping the wind and accretion in Vela X-1 – XMM-Newton (co-I.)
2017-18	Computing time on the Flemish Tier-1 VSC cluster : 2.5 Mh·CPU
2015-16	Computing time on the French CINES Tier-1 cluster : 600 kh·CPU
2012	1-week observing time at the Mont Mégantic Observatory (Canada)

Supervision & teaching

Supervision

2018-...	Co-supervisor with Jon Sundqvist of a graduate student, Nicolas Moens
2018-...	Member of the supervisory committee of a graduate student, Luka Poniatowski
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

2018-19	Lecturer in Computational methods for Astrophysics, 5 th year – KU Leuven
2017-18	Teaching assistant (TA) Linear Algebra, 1 st year – KU Leuven
2016-17	TA Computational methods for Astrophysics, 5 th year – KU Leuven
2014-16	TA Classical Mechanics, 1 st year – Univ. of Paris 7 Diderot
2013	TA Physics for Medical studies, 1 st year – Univ. of Paris 7 Diderot
2013	TA 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	High school Gustave Eiffel – Cachan

Community service

Reviewing

2018	Reviewer for The Astrophysical Journal
2018	Reviewer for DiRAC High Performance Computing Tier-1

Outreach

Oc 2017	1h30 radio interview on scientific communication in <i>Faconde</i> – Brussels
Nv 2015	Community manager and webmaster of the Young Physicists Meeting – Paris
Oc 2015	Festival of Science – Paris Diderot University
Sp 2015	3D-printed models and Wolfram interactive applet for the Roche potential
2013	Java applet on Turing theory of morphogenesis – Paris Observatory

Publications in peer-reviewed journals

- [1] **El Mellah I.**, Sundqvist J. O. & Keppens R.
*Wind Roche lobe overflow in high mass X-ray binaries :
A possible mass transfer mechanism for Ultraluminous X-ray sources* (2019) – A&A
- [2] Decin L., Homan W., Danilovich T., de Koter A., Engels D., Waters L. B. F. M.,
Muller S., Gielen C., García-Hernández D. A., Stancliffe R. J., Van de Sande M.,
Molenberghs G., Kerschbaum F., Zijlstra A. A., **El Mellah I.**
*Solving the conundrum of the short superwind yields key
to maximum mass-loss rate of AGB stars* (under reviewing)
- [3] **El Mellah I.**, Sander A. A. C., Sundqvist J. O. & Keppens R. [arXiv:1810.12933]
*Formation of wind-captured discs in Supergiant X-ray binaries :
Consequences for Vela X-1 and Cygnus X-1* (under reviewing)
- [4] Xia C., Teunissen J., **El Mellah I.**, Chané E. & Keppens R.
MPI-AMRVAC 2.0 for solar and astrophysical applications (2018) – ApJS
- [5] **El Mellah I.**, Sundqvist J. O. & Keppens R.
Accretion from a clumpy massive-star wind in Supergiant X-ray binaries (2018)
MNRAS
- [6] 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
- [7] **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
- [8] **El Mellah I.** & Casse F.
*Numerical simulations of axisymmetric hydrodynamical Bondi-Hoyle accretion
on to a compact object* (2015) – MNRAS
- [9] Sanchis-Ojeda R., Rappaport S., Winn J., Kotson M., Levine A., **El Mellah I.**
The shortest-period planets found with Kepler (2014) – ApJ
- [10] 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
- [11] 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 KIC12557548 (2012) – ApJ

- [12] **El Mellah I.**, Sundqvist J. O. & Keppens R.
Wind-captured discs in Supergiant X-ray binaries (2018) - IAU Vienna
- [13] Fürst F., Kretschmar P., Grinberg V., Pottschmidt Katja, Wilms J., Kühnel M.,
El Mellah I., Martínez-Núñez S.
Variability in High Mass X-ray Binaries (2018) - XMM-Newton workshop
- [14] **El Mellah I.**, Sundqvist J. O. & Keppens R.
Clumpy wind accretion in Supergiant X-ray binaries (2017) - SF2A
- [15] **El Mellah I.** & Casse F.
Numerical simulations of Bondi-Hoyle accretion onto a compact object (2015) - SF2A