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 - Cargése, 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., subm.)
2018	Spectral evolution of the HMXB IGR J16393 - XMM-Newton (co-I., subm.)
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, 5th year - KU Leuven
2017-18	Teaching assistant (TA) Linear Algebra, 1st year - KU Leuven
2016-17	TA Computational methods for Astrophysics, 5th year - KU Leuven
2014-16	TA Classical Mechanics, 1st year - Univ. of Paris 7 Diderot
2013	TA Physics for Medical studies, 1st year - Univ. of Paris 7 Diderot
2013	TA 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	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 *Faconde* - 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

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[1] **El Mellah I.**, Sundqvist J. O. & Keppens R., [arXiv:1810.12937]
Wind Roche lobe overflow in high mass X-ray binaries :
A possible mass transfer mechanism for Ultraluminous X-ray sources (under reviewing)

[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

Proceedings

[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