

Curriculum Vitae: Laurent Mahy

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Date of birth: 23 November 1982

Birth place: Namur, Belgium

marital status: married, two children

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I. Expertise

Observer using ground and space-based facilities on world-class observational facilities through open time competition. Expert in multi-wavelength (UV, Optical, IR) analysis of massive stars with extensive expertise in spectroscopy, photometry, atmosphere modelling and spectral disentangling to measure fundamental properties of massive single and multiple stars.

II. Education

- **Postgraduate degree** 2007 – 2011
PhD in Astronomy with thesis title: *Astrophysical parameters and multiplicity of massive stars: a mathematical approach*, awarded on 12 December 2011 by Department of Astrophysics, Geophysics, and Oceanography, University of Liège, Belgium.
- **Senior secondary school teaching qualifications (Agrégation)** 2005-2006
Orientation Mathematics-Physics from University of Namur, Belgium
- **Master in Applied Mathematics Sciences** 2003-2005
Master in Celestial Mechanics with thesis title: *“Développement du champ de gravité terrestre en harmoniques ellipsoïdales et applications”* – awarded by University of Namur, Belgium with the grade “magna cum laude”
- **Bachelor in Applied Mathematics Sciences** 2000-2003
Department of Mathematics, University of Namur, Belgium
- **Secondary school diploma** 2000
Mathematics - Latin, Institut Saint-Louis, Namur, Belgium

III. Employment

- **Senior Researcher** 2021 – to date
Royal Observatory of Belgium, Brussels, Belgium
- **Post-doctoral research associate/BELSPO-Prodex HST** 2020 – 2021
Institute of Astronomy, KU Leuven, Leuven, Belgium.
- **Post-doctoral research associate in the MAESTRO project** 2018 – 2020
Institute of Astronomy, KU Leuven, Leuven, Belgium.
- **Post-doctoral research associate** 2017 – 2018
Institute of Astronomy, KU Leuven, Leuven, Belgium.
- **F.R.S-FNRS Post-doctoral research associate** 2014 – 2017
Department of Astrophysics, Geophysics, and Oceanography, University of Liège, Belgium.
- **IT Consulting analyst** 2012 – 2014
Sopra Banking Software, Brussels, Belgium.
- **PRODEX/XMM Post-doctoral research associate** 2011 – 2012
Department of Astrophysics, Geophysics, and Oceanography, University of Liège, Belgium.
- **PRODEX/XMM Doctoral researcher** 2007 – 2011
Department of Astrophysics, Geophysics, and Oceanography, University of Liège, Belgium.
- **Scientific collaborator** 2007
Department of Applied Mathematics, University of Namur, Belgium.
- **High school teacher** 2006 – 2007
Mathematics - Physics, Collège Saint-Guibert, Gembloux, Belgium

IV. Languages

French (native), English (Fluent), Dutch (intermediate), Spanish (beginner)

V. Teaching & Supervision Experience

PhD theses

• Co-supervisor of Francoise Raucq, University of Liège, Belgium	2014 – 2016
• Examination committee member of Julia Bodensteiner, KU Leuven, Belgium	2017 – 2021
• Co-supervisor of Calum Hawcroft, KU Leuven, Belgium	2018 – 2022
• Co-supervisor of Gareth Banyard, KU Leuven, Belgium	2018 – 2023

Master theses

• Examination committee member (reader) of Sophie Rosu - University of Liège, Belgium.	2016
• Examination committee member (reader) of Prem Kumar Bulusu KU Leuven, Belgium.	2018
• Supervisor of Lukas van Riel, KU Leuven, Belgium	Sept. 2018 – June 2019
• Supervisor of Nimmy Samson Attipetty, KU Leuven, Belgium	Sept. 2019 – June 2020
• Co-supervisor of Soetkin Janssens, KU Leuven, Belgium	Sept. 2019 – June 2020

Bachelor and Master student projects

Supervision of 15 bachelor and master student projects about massive stars. 2017 - 2020

Binary Stars class (B-KUL-G0I55A), KU Leuven, Belgium

2019 – 2020

VI. Awards & Prizes

• PI - FNRS-F.R.S. Postdoctoral fellowship ~250,000 euros + 15,000 euros credit	2014 - 2017
• PI - FWO, Travel grant 1,650 euros	2019
• PI - BELSPO/PRODEX - HST ~230,000 euros	2020 - 2022
• PI - BIPASS project - Indo/Belgian network collaboration, BELSPO ~35,000 euros	2022 - 2025
• BELSPO/PRODEX - Gaia ~560,000 euros	2023 - 2025
• PI of a 4-yr PhD fellowship - Royal Observatory of Belgium, Belgium ~320,000 euros	2022 - 2026
• PI FED-Twin project (10-yr Postdoctoral fellowship) - BELSPO, Belgium ~1,500,000 euros	2025 - 2035
• PI - Travel grant - conference Contifest, USA ~300 dollars	2008
• Pol & Christiane Swings prize , Royal Academy of Sciences, Belgium 1,500 euros	2017
• Paul & Marie Stroobant prize , Royal Academy of Sciences, Belgium 1,000 euros	2021
• Member of the International Astronomical Union (IAU)	2018

VII. Conference/Summer school Organization

• LIAC41: The eventful life of massive star multiples SOC member, University of Liege, Belgium	July 2024
• EAS 2023 SOC member: “Stellar interactions: contact binary stars and common-envelope evolution”, 2-day symposium at the EAS annual meetings, Kraków, Poland	July 2023
• 3rd BINA meeting SOC member, Session Chair and Guest Editor, Bhimtal, India	22 – 24 March 2023
• EAS 2021	July 2021

Chair, SOC member: “Stars on the pathway of becoming gravitational-wave mergers”, 2-day symposium at the EAS annual meetings, Leiden, the Netherlands (to be held in Leiden, the Netherlands, 2021)

- **Liège Astrophysical winter school**

17 – 19 January 2011

Co-organiser of the winter school titled “Radiative Transfer in Stellar Environments” with invited speakers: Prof. D. J. Hillier, Dr. R. Blomme, and Prof. van Hoof

VIII. Miscellaneous

- Junior IAU member
- Referee for ApJ, A&A, MNRAS, and AJ
- ESO Observing Programs Committee member
- Arago science team member (ESA M5 candidate)
- UVEX Science team member (Co-I in pillar 1, obj 3)
- PI of the BIPASS project - Belgo-Indian Networking collaboration
- Working group leader of the Plato mission (Stars with mass loss)
- Leader for the Belgian O-star node in the Gaia-ESO Survey consortium, VLT/Flames Tarantula Survey consortium, of the XShootU/ULLYSES (UV, visible and infrared spectroscopy of massive stars at low metallicity) consortium, and the BLOeM consortium
- member of the Gaia DPAC CU4

IX. Observing runs

Exemplary track record in obtaining observing time as Principal Investigator (PI) on high-profile ESO, ESA and NASA observing facilities, including ESO-2.2m/FEROS, VLT/UVES, /MUSE, VLT/PIONIER, HST/COS and STIS, SALT/HRS and on other smaller facilities, 1.2m MERCATOR/HERMES, OHP/1.93m, OHP/1.52m, 2.12m SPM/espresso, 1.2m LA LUZ/tigre, with over 150 hours obtained as PI in the last 10 years and at least an equivalent amount as co-I.

- 8 orbits with Hubble Space Telescope (HST) as Co-I, granted in Cycle 29 (2021-2022)
- 27 orbits with Hubble Space Telescope (HST) as Co-I, granted in Cycle 28 (2020-2021)
- 6 orbits with Hubble Space Telescope (HST) as Co-I, granted in Cycle 27 (2019-2020)
- 42 orbits with Hubble Space Telescope (HST) as PI, granted in Cycle 26 (2018-2019)
- 1-week campaign (observer) on 1.2m/HERMES (Roque de los Muchachos - Spain) in October 2021
- 1-week campaign (observer) on 1.2m/HERMES (Roque de los Muchachos - Spain) in October 2020.
- 2-week campaign (observer) on 1.2m/HERMES (Roque de los Muchachos - Spain) in March-April 2018.
- 2-week campaign as PI (observer) on 2.2m/FEROS (La Silla - Chile) in April-May 2012.
- 1-week campaign as PI (observer) on 1.52m/AURELIE (Observatoire de Haute Provence - France) in August 2010
- 1-week campaign as PI (observer) on 1.52m/AURELIE (Observatoire de Haute Provence - France) in June 2010
- 2-week campaign as Co-I (observer) on 2.12m/ESPRESSO (San Pedro Martir - Mexico) in October 2009
- 1-week campaign as Co-I (observer) on 1.52m/AURELIE (Observatoire de Haute Provence - France) in January 2008

X. Scientific Conferences, Seminars & Workshops

- Contributed talk at Rodolpho Barba's meeting, Madrid, Spain (declined) September 2024
- Contributed talk at LIAC41, Liege, Belgium July 2024
- Invited talk at XShootU meeting, Prague, Tchequie September 2023
- Invited talk at “3,2,1: Massive Triples, Binaries and Mergers 2023”, Leuven, Belgium, July 2023
- Invited talk at “Stellar Variability, Stellar Multiplicity: Periodicity in Time & Motion MW-GAIA WG2 Hybrid Workshop”, Sofia, Bulgaria, June 2023
- Invited talk at Lorentz Center, “Interstellar Soot and Sand with JWST”, Leiden, the Netherlands April 2023
- Poster at the 3rd BINA workshop “Scientific potential of the Indo-Belgian cooperation”, Bhimtal, India, March 2023
- Contributed talk at ESO day, Brussels, Belgium, Dec 8th 2022
- Contributed talk at IMBASE 2022, Garching, Germany, Nov 17th 2022
- Contributed talk at IAUS361 - Ballyconnell, Ireland, May 2022
- Contributed talk at Asymmetrical Post-main-sequence Nebulae 8 e2021 - The Shaping of Stellar Outflows, virtual conference, October 2021
- Seminar (invited) “Massive binaries in the Tarantula region” at IAA (Belgium), 25th March 2021
- Seminar (invited) “Multiplicity among massive stars: Overview through the HR diagram” at IAC (Spain), 19th November 2020

- Poster at Mobster-1 virtual conference 2020, Format was changed to a virtual conference because of the COVID-19 pandemic.
- Contributed talk at EWASS 2019, Lyon (France), June 2019.
- XIIth VFTS meeting, Edinburgh (Scotland), April 2019
- Seminar (invited): “Spectral disentangling: a tool to constrain the evolution of massive stars”, at the KU Leuven institute of astrophysics (lvS) seminar (Belgium) March. 2019
- Contributed talk at Massive Stars and Supernovae conference, Bariloche (Argentina) November 2018
- Massive star meeting, Leuven (Belgium) October 2018
- Contributed talk at 6th TIGRE workshop, University of Liège (Belgium) June 2018
- Contributed talk at Belgian contact group meeting, Brussel (Belgium) June 2018
- 10th CÉCI Scientific Meeting, University of Namur (Belgium) May 2018
- Contributed talk at XIth VFTS meeting, Tenerife (Spain) April 2018
- Einstein Telescope event meeting, University of Liège (Belgium) January 2018
- Contributed talk at STAR meeting, University of Liège (Belgium) Sept 2017
- Contributed talk at Gaia-ESO meeting, Catania (Italy) Sept 2017.
- Contributed talk at Eta Carinae, LBVs, and Supernova Impostors, Pittsburgh (PA, USA) June 2017
- Contributed talk at Xth VLT/FLAMES Tarantula Survey (VFTS) meeting, Leuven (Belgium), May 2017
- Contributed talk at GREAT workshop: Massive stars and the Gaia-ESO Survey, Brussel (Belgium), May 2015
- Contributed talk at 3rd TIGRE workshop, University of Liège (Belgium) December 2014
- Poster at GREAT-ESF Workshop: Stellar atmosphere in the Gaia era, Quantitative spectroscopy and comparative spectrum modelling, Brussel (Belgium), June 2011
- Poster at IAU Symposium 272, Paris (France), July 2010
- Contributed talk at 39th LIAC “The multi-wavelength view of hot, massive stars”, Liège (Belgium), July 2010
- Contributed talk at CoRoT O star meeting, Leuven (Belgium), July 2009 and Liège (Belgium), November 2009
- Contributed talk at ARC meeting: space and ground based imaging in astrophysics, Liège (Belgium), February 2009, February 2010, March 2011
- Seminar (invited) “Multiplicity of O-type stars in NGC 2244” at University of Guanajuato (Mexico), October 2009
- Poster at ‘Hot massive stars, a lifetime of influence, a workshop in honor of Peter S. Conti’, Flagstaff (AZ, USA), October 2008
- Evolution and pulsation of massive stars on the main sequence and close to it, Liège (Belgium), July 2008

xi. Public Engagement and Outreach

- In charge of the 45cm refractor telescope at the Royal Observatory of Belgium, public presentations and refurbishment
- Outreach presentation on spectroscopy for high school students in visit at Institute of Astronomy at KU Leuven (Belgium)
- Since 2015, Participation to astronomical exhibitions organised by the amateur club of astronomy of Namur (Astronamur), Belgium.
- Participation to the interactive astronomical exhibitions for the “Printemps des Sciences” at the University of Liège, Belgium:
 - In 2008, “hunting exoplanets” for primary schools and “Other earths” for secondary schools).
 - In 2009, “Revolution in the solar system” for primary schools and “Evolution of the universe” for secondary schools.
 - In 2010, “hunting exoplanets” for primary schools and “Celestial Cataclysms” for the secondary school.
 - In 2011, “Signatures of matter” for primary and secondary school.

xii. Publications

Referred papers:

- 1) Hourihane, A., Francois, P., Worley, C. C., Magrini, L., Gonneau, A., Casey, A. R., Gilmore, G., Randich, S., Sacco, G. G., Recio-Blanco, A., Korn, A. J., Allende Prieto, C., Smiljanic, R., Blomme, R., Bragaglia, A., Walton, N. A., Van Eck, S., Bensby, T., Lanzafame, A., Frasca, A., Franciosini, E., Damiani, F., Lind, K., Bergemann, M., Bonifacio, P., Hill, V., Lobel, A., Montes, D., Feuillet, D. K., Tautvaisene, G., Guiglion, G., Tabernero, H. M., Gonzalez Hernandez, J. I., Gebran, M., Van der Swaelmen, M., Mikolaitis, Daflon, S., Merle, T., Morel, T., Lewis, J. R., Gonzalez Solares, E. A., Murphy, D. N. A., Jeffries, R. D., Jackson, R. J., Feltzing, S., Prusti, T., Carraro, G., Biazzo, K., Prisinzano, L., Jofre, P., Zaggia, S., Drazdauskas, A., Stonkute, E., Marfil, E., Jimenez-Esteban, F., **Mahy, L.**, Gutierrez Albarran, M. L., Berlanas, S. R., Santos, W., Morbidelli, L., Spina, L., Minkevi-

ciute, R. (2023), “*The Gaia-ESO Survey: homogenisation of stellar parameters and elemental abundances*”, Astronomy & Astrophysics, in press.

- 2) Hawcroft, C., Sana, H., **Mahy, L.**, Sundqvist, J. O., de Koter, A., Crowther, P. A., Bestenlehner, J. M., Brands, S. A., David-Uraz, A., Decin, L., Erba, C., Garcia, M., Hamann, W. -R., Herrero, A., Ignace, R., Kee, N. D., Kubátová, B., Lefever, R., Moffat, A., Najarro, F., Oskinova, L., Pauli, D., Prinja, R., Puls, J., Sander, A. A. C., Shenar, T., St-Louis, N., ud-Doula, A., Vink, J. S. (2023), “*X-Shooting ULLYSES: Massive stars at low metallicity. III. Terminal wind speeds of ULLYSES massive stars*”, Astronomy & Astrophysics, in press.
- 3) Sen, K., Langer, N., Pauli, D., Gräfener, G., Schootemeijer, A., Sana, H., Shenar, T., **Mahy, L.**, Wang, C. (2023), “*Reverse Algols and hydrogen-rich Wolf-Rayet stars from very massive binaries*”, Astronomy & Astrophysics, in press.
- 4) Banyard, G., **Mahy, L.**, Sana, H., Bodensteiner, J., Villaseñor, J. I., Sen, K., Langer, N., de Mink, S., Picco, A., Shenar, T. (2023), “*Searching for compact objects in the single-lined spectroscopic binaries of the young Galactic cluster NGC 6231*”, Astronomy & Astrophysics, in press.
- 5) Lanthermann, C., Le Bouquin, J. -B., Sana, H., Mérand, A., Monnier, J. D., Perraut, K., Frost, A. J., **Mahy, L.**, Gosset, E., De Becker, M., Kraus, S., Anugu, N., Davies, C. L., Ennis, J., Gardner, T., Labdon, A., Setterholm, B., ten Brummelaar, T., Schaefer, G. H. (2023), “*Multiplicity of northern bright O-type stars with optical long baseline interferometry. Results of the pilot survey*”, Astronomy & Astrophysics, 672A, 6.
- 6) Berlanas, S. R., Maíz Apellániz, J., Herrero, A., **Mahy, L.**, Blomme, R., Negueruela, I., Dorda, R., Comerón, F., Gosset, E., Pantaleoni González, M., Molina Lera, J. A., Sota, A., Furst, T., Alfaro, E. J., Bergemann, M., Carraro, G., Drew, J. E., Morbidelli, L., Vink, J. S. (2023), “*Gaia-ESO survey: Massive stars in the Carina Nebula. I. A new census of OB stars*”, Astronomy & Astrophysics, 671A, 20.
- 7) Sana, H., Ramírez-Agudelo, O. H., Hénault-Brunet, V., **Mahy, L.**, Almeida, L. A., de Koter, A., Bestenlehner, J. M., Evans, C. J., Langer, N., Schneider, F. R. N., Crowther, P. A., de Mink, S. E., Herrero, A., Lennon, D. J., Gieles, M., Maíz Apellániz, J., Renzo, M., Sabbi, E., van Loon, J. Th., Vink, J. S., (2022), “*The VLT-FLAMES Tarantula Survey. Observational evidence for two distinct populations of massive runaway stars in 30 Doradus*”, Astronomy & Astrophysics, 668L, 5.
- 8) Gilmore, G., Randich, S., Worley, C. C., Hourihane, A., Gonneau, A., Sacco, G. G., Lewis, J. R., Magrini, L., Francois, P., Jeffries, R. D., Koposov, S. E., Bragaglia, A., Alfaro, E. J., Allende Prieto, C., Blomme, R., Korn, A. J., Lanzafame, A. C., Pancino, E., Recio-Blanco, A., Smiljanic, R., Van Eck, S., Zwitter, T., Bensby, T., Flaccomio, E., Irwin, M. J., Franciosini, E., Morbidelli, L., Damiani, F., Bonito, R., Friel, E. D., Vink, J. S., Prisinzano, L., Abbas, U., Hatzidimitriou, D., Held, E. V., Jordi, C., Paunzen, E., Spagna, A., Jackson, R. J., Maiz Apellaniz, J., Asplund, M., Bonifacio, P., Feltzing, S., Binney, J., Drew, J., Ferguson, A. M. N., Micela, G., Negueruela, I., Prusti, T., Rix, H. -W., Vallenari, A., Bergemann, M., Casey, A. R., de Laverny, P., Frasca, A., Hill, V., Lind, K., Sbordone, L., Sousa, S. G., Adibekyan, V., Caffau, E., Daflon, S., Feuillet, D. K., Gebran, M., Gonzalez Hernandez, J. I., Guiglion, G., Herrero, A., Lobel, A., Merle, T., Mikolaitis, S., Montes, D., Morel, T., Ruchti, G., Soubiran, C., Tabernero, H. M., Tautvaisiene, G., Traven, G., Valentini, M., Van der Swaelmen, M., Villanova, S., Viscasillas Vazquez, C., Bayo, A., Biazzo, K., Carraro, G., Edvardsson, B., Heiter, U., Jofre, P., Marconi, G., Martayan, C., Masseron, T., Monaco, L., Walton, N. A., Zaggia, S., Aguirre Borsen-Koch, V., Alves, J., Balaguer-Nunez, L., Barklem, P. S., Barrado, D., Bellazzini, M., Berlanas, S. R., Binks, A. S., Bressan, A., Capuzzo-Dolcetta, R., Casagrande, L., Casamiquela, L., Collins, R. S., D'Orazi, V., Dantas, M. L. L., Debattista, V. P., Delgado-Mena, E., Di Marcantonio, P., Drazdauskas, A., Evans, N. W., Famaey, B., Franchini, M., Fremat, Y., Fu, X., Geisler, D., Gerhard, O., Gonzalez Solares, E. A., Grebel, E. K., Gutierrez Albarran, M. L., Jimenez-Esteban, F., Jonsson, H., Khachatryan, T., Kordopatis, G., Kos, J., Lagarde, N., Ludwig, H. -G., **Mahy, L.**, Mapelli, M., Marfil, E., Martell, S. L., Messina, S., Miglio, A., Minchev, I., Moitinho, A., Montalbán, J., Monteiro, M. J. P. F. G., Morossi, C., Mowlavi, N., Mucciarelli, A., Murphy, D. N. A., Nardetto, N., Ortolani, S., Paletou, F., Palous, J., Pickering, J. C., Quirrenbach, A., Re Fiorentin, P., Read, J. I., Romano, D., Ryde, N., Sanna, N., Santos, W., Seabroke, G. M., Spina, L., Steinmetz, M., Stonkute, E., Sutorius, E., Thevenin, F., Tosi, M., Tsantaki, M., Wright, N., Wyse, R. F. G., Zoccali, M., Zorec, J., Zucker, D. B. (2022), “*The Gaia-ESO Public Spectroscopic Survey: Motivation, implementation, GIRAFFE data processing, analysis, and final data products*”, Astronomy & Astrophysics, 666A, 120.

- 9) Chené, A. -N., **Mahy, L.**, Gosset, E., St-Louis, N., Dsilva, K., Manick, R. (2022), “*WR 63: A multiple system (O+O)+WR ?*”, Monthly Notices of the Royal Astronomical Society, 516, 1022.
- 10) Abdul-Masih, M., Escorza, A., Menon, A., **Mahy, L.**, Marchant, P. (2022), “*Constraining the overcontact phase in massive binary evolution -- II. Period stability of known O+O overcontact systems*”, Astronomy & Astrophysics, 666A, 18.
- 11) **Mahy, L.**, Sana, H., Shenar, T., Sen, K., Langer, N., Marchant, P., Abdul-Masih, M., Banyard, G., Bodensteiner, J., Bowman, D. M., Dsilva, K., Fabry, M., Hawcroft, C., Janssens, S., Van Reeth, T., Eldridge, C. (2022), “*Identifying quiescent compact objects in massive Galactic single-lined spectroscopic binaries*”, Astronomy & Astrophysics, 664A, 159.
- 12) Morel, T., Blazère, A., Semaan, T., Gosset, E., Zorec, J., Frémat, Y., Blomme, R., Daflon, S., Lobel, A., Nieva, M. F., Przybilla, N., Gebran, M., Herrero, A., **Mahy, L.**, Santos, W., Tautvaišienė, G., Gilmore, G., Randich, S., Alfaro, E. J., Bergemann, M., Carraro, G., Damiani, F., Franciosini, E., Morbidelli, L., Pancino, E., Worley, C. C., Zaggia, S. (2022), “*The Gaia-ESO survey: A spectroscopic study of the young open cluster NGC 3293*”, Astronomy & Astrophysics, 665A, 108.
- 13) Shenar, T., Sana, H., **Mahy, L.**, Maiz Apellaniz, J., Crowther, P. A., Gromadzki, M., Herrero, A., Langer, N., Marchant, P., Schneider, F. R. N., Sen, K., Soszynski, I., Toonen, S. (2022), “*The Tarantula Massive Binary Monitoring VI: Characterisation of hidden companions in 51 single-lined O-type binaries, a flat mass-ratio distribution, and black-hole binary candidates*”, Astronomy & Astrophysics, 665A, 148.
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