

PRODUCTION SCIENTIFIQUE

Le cœur de ma recherche est le développement de techniques haut-contraste innovantes, essentielles pour détecter et caractériser des objets orbitant à faible séparation d'étoiles très brillantes (exoplanètes et ceintures de poussière). Au fil des années, j'ai acquis une expertise unique dans la compréhension analytique et la simulation numérique de ces instruments, à la fois au sol et dans l'espace, atteignant des performances sans précédent sur des bancs expérimentaux et directement en améliorant des instruments existants. En parallèle, je suis spécialiste de l'étude des exosystèmes, ayant analysé des données provenant de plusieurs instruments haut-contraste. Mes recherches intègrent de manière complémentaire le développement instrumental et l'analyse d'observations. À mesure que les instruments coronagraphiques deviennent plus complexes, maximiser leur potentiel nécessite une expertise en instrumentation, et les enseignements tirés des observations sur le ciel sont essentiels pour orienter les futurs développements instrumentaux.

60 articles acceptés dans des revues à comité de lecture, dont :

- **7 articles en tant que premier auteur + 1 en tant que co-premier auteur,**
- **10 articles avec contributions majeures (2ème ou 3ème auteur),**
- **42 articles avec contributions moins importantes.**

52 actes de conférences (principalement SPIE), dont 11 en tant que premier auteur.
Tous mes articles et actes sont en libre accès.

Google Scholar analytics : 3303 citations — h-index = 32.

PRINCIPAUX ARTICLES

1. Squicciarini, V. ; **Mazoyer, J.** ; Wilkinson, C. et al. (2025), *GPI+SPHERE detection of a 6.1 M_{Jup} circumbinary planet around HD 143811*, Astronomy and Astrophysics, 702, L10, [DOI link](#), [arXiv link](#)
2. Stasevic, S. ; Milli, J. ; **Mazoyer, J.** et al. (2025), *Optimising reference library selection for reference-star differential imaging of discs with SPHERE/IRDIS*, Astronomy and Astrophysics, 701, A93, [DOI link](#), [arXiv link](#)
3. Leginja, I. ; Baudoz, P. ; **Mazoyer, J.** et al. (2025), *Extended linearity in the high-order wavefront sensor for the Roman Coronagraph*, Astronomy and Astrophysics, 698, A130, [DOI link](#), [arXiv link](#), 2 citations
4. Squicciarini, V. ; **Mazoyer, J.** ; Lagrange, A. -M. et al. (2025), *The COBREX archival survey: Improved constraints on the occurrence rate of wide-orbit substellar companions: I. A uniform re-analysis of 400 stars from the GPIES survey*, Astronomy and Astrophysics, 693, A54, [DOI link](#), [arXiv link](#), 7 citations
5. Gutierrez, Y. ; **Mazoyer, J.** ; Mugnier, L. M. et al. (2024), *Image-based wavefront correction using model-free reinforcement learning*, Optics Express, 32, 31247, [DOI link](#), [arXiv link](#)
6. Galicher, R. ; Potier, A. ; **Mazoyer, J.** et al. (2024), *Increasing the raw contrast of VLT/SPHERE with the dark hole technique. III. Broadband reference differential imaging of HR4796 using a four-quadrant phase mask*, Astronomy and Astrophysics, 686, A54, [DOI link](#), [arXiv link](#), 4 citations
7. Galicher, R. & **Mazoyer, J.** (2024), *Imaging exoplanets with coronagraphic instruments*, Comptes Rendus Physique, 24, 133, [DOI link](#), [arXiv link](#), 19 citations
8. Stasevic, S. ; Milli, J. ; **Mazoyer, J.** et al. (2023), *An inner warp discovered in the disk around HD 110058 using VLT/SPHERE and HST/STIS*, Astronomy and Astrophysics, 678, A8, [DOI link](#), [arXiv link](#), 7 citations
9. Potier, A. ; **Mazoyer, J.** ; Wahhaj, Z. et al. (2022), *Increasing the raw contrast of VLT/SPHERE with the dark hole technique. II. On-sky wavefront correction and coherent differential imaging*, Astronomy and Astrophysics, 665, A136, [DOI link](#), [arXiv link](#), 23 citations
10. Chen, C. ; **Mazoyer, J.** ; Poteet, C. A. et al. (2020), *Multiband GPI Imaging of the HR 4796A Debris Disk*, The Astrophysical Journal, 898, 55, [DOI link](#), [arXiv link](#), 38 citations
11. **Mazoyer, J.** ; Pueyo, L. ; N'Diaye, M. et al. (2018), *Active Correction of Aperture Discontinuities-Optimized Stroke Minimization. II. Optimization for Future Missions*, The Astronomical Journal, 155, 8, [DOI link](#), [arXiv link](#), 23 citations
12. **Mazoyer, J.** ; Pueyo, L. ; N'Diaye, M. et al. (2018), *Active Correction of Aperture Discontinuities-Optimized Stroke Minimization. I. A New Adaptive Interaction Matrix Algorithm*, The Astronomical Journal, 155, 7, [DOI link](#), [arXiv link](#), 18 citations

13. Fogarty, K. ; Pueyo, L. ; **Mazoyer, J.** et al. (2017), *Polynomial Apodizers for Centrally Obscured Vortex Coronagraphs*, The Astronomical Journal, 154, 240, [DOI link](#), [arXiv link](#), 10 citations
14. **Mazoyer, J.** ; Pueyo, L. ; Norman, C. et al. (2016), *Active compensation of aperture discontinuities for WFIRST-AFTA: analytical and numerical comparison of propagation methods and preliminary results with a WFIRST-AFTA-like pupil*, Journal of Astronomical Telescopes, Instruments, and Systems, 2, 011008, [DOI link](#), [arXiv link](#), 9 citations
15. **Mazoyer, J.** ; Boccaletti, A. ; Choquet, É. et al. (2016), *A Symmetric Inner Cavity in the HD 141569A Circumstellar Disk*, The Astrophysical Journal, 818, 150, [DOI link](#), [arXiv link](#), 13 citations
16. **Mazoyer, J.** ; Boccaletti, A. ; Augereau, J. -C. et al. (2014), *Is the HD 15115 inner disk really asymmetrical?*, Astronomy and Astrophysics, 569, A29, [DOI link](#), [arXiv link](#), 35 citations
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18. **Mazoyer, J.** ; Baudoz, P. ; Galicher, R. et al. (2013), *Estimation and correction of wavefront aberrations using the self-coherent camera: laboratory results*, Astronomy and Astrophysics, 557, A9, [DOI link](#), [arXiv link](#), 41 citations

AUTRES ARTICLES

1. Hom, J. ; Esposito, T. M. ; Crotts, K. A. et al. (2025), *The Disks In Scorpius-Centaurus Survey (DISCS). I. Four Newly Resolved Debris Disks in Polarized Intensity Light*, The Astronomical Journal, 170, 46, [DOI link](#), [arXiv link](#), 2 citations
2. Lagrange, A. -M. ; Wilkinson, C. ; Mälin, M. et al. (2025), *Evidence for a sub-Jovian planet in the young TWA 7 disk*, Nature, 642, 905, [DOI link](#), [arXiv link](#), 13 citations
3. Desgrange, C. ; Milli, J. ; Chauvin, G. et al. (2025), *Dust populations from 30 to 1000 au in the debris disk of HD 120326: Panchromatic view with VLT/SPHERE, ALMA, and HST/STIS*, Astronomy and Astrophysics, 698, A183, [DOI link](#), [arXiv link](#), 1 citation
4. Chomez, A. ; Delorme, P. ; Lagrange, A. -M. et al. (2025), *The SPHERE infrared survey for exoplanets (SHINE): IV. Complete observations, data reduction and analysis, detection performances, and final results*, Astronomy and Astrophysics, 697, A99, [DOI link](#), [arXiv link](#), 6 citations
5. Ray, S. ; Sallum, S. ; Hinkley, S. et al. (2025), *The JWST Early Release Science Program for Direct Observations of Exoplanetary Systems. III. Aperture Masking Interferometric Observations of the Star HIP 65426 at 3.8 μm* , The Astrophysical Journal, 983, L25, [DOI link](#), [arXiv link](#), 7 citations
6. Luginja, I. ; Carrión-González, Ó. ; Laugier, R. et al. (2025), *Advancing European high-contrast imaging R&D towards the Habitable Worlds Observatory*, Astrophysics and Space Science, 370, 29, [DOI link](#), [arXiv link](#)
7. Wilkinson, C. ; Charnay, B. ; Mazevet, S. et al. (2024), *Breaking degeneracies in exoplanetary parameters through self-consistent atmosphere-interior modelling*, Astronomy and Astrophysics, 692, A113, [DOI link](#), [arXiv link](#), 6 citations
8. Lewis, B. L. ; Fitzgerald, M. P. ; Esposito, T. M. et al. (2024), *Gemini Planet Imager Observations of a Resolved Low-inclination Debris Disk around HD 156623*, The Astronomical Journal, 168, 142, [DOI link](#), [arXiv link](#), 2 citations
9. Goulas, C. ; Galicher, R. ; Vidal, F. et al. (2024), *Numerical simulations for the SAXO+ upgrade: Performance analysis of the adaptive optics system*, Astronomy and Astrophysics, 689, A199, [DOI link](#), [arXiv link](#), 2 citations
10. Petrus, S. ; Whiteford, N. ; Patapis, P. et al. (2024), *The JWST Early Release Science Program for Direct Observations of Exoplanetary Systems. V. Do Self-consistent Atmospheric Models Represent JWST Spectra? A Showcase with VHS 1256–1257 b*, The Astrophysical Journal, 966, L11, [DOI link](#), [arXiv link](#), 32 citations
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12. Sallum, S. ; Ray, S. ; Kammerer, J. et al. (2024), *The JWST Early Release Science Program for Direct Observations of Exoplanetary Systems. IV. NIRISS Aperture Masking Interferometry Performance and Lessons Learned*, The Astrophysical Journal, 963, L2, [DOI link](#), [arXiv link](#), 10 citations

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14. Crotts, K. A. ; Matthews, B. C. ; Duchêne, G. et al. (2024), *A Uniform Analysis of Debris Disks with the Gemini Planet Imager. I. An Empirical Search for Perturbations from Planetary Companions in Polarized Light Images*, The Astrophysical Journal, 961, 245, [DOI link](#), [arXiv link](#), 13 citations
15. Vaughan, S. R. ; Gebhard, T. D. ; Bott, K. et al. (2023), *Chasing rainbows and ocean glints: Inner working angle constraints for the Habitable Worlds Observatory*, Monthly Notices of the Royal Astronomical Society, 524, 5477, [DOI link](#), [arXiv link](#), 34 citations
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19. Crotts, K. A. ; Draper, Z. H. ; Matthews, B. C. et al. (2022), *A Multiwavelength Study of the Highly Asymmetrical Debris Disk around HD 111520*, The Astrophysical Journal, 932, 23, [DOI link](#), [arXiv link](#), 8 citations
20. Betti, S. K. ; Follette, K. ; Jorquera, S. et al. (2022), *Detection of Near-infrared Water Ice at the Surface of the (Pre)Transitional Disk of AB Aur: Informing Icy Grain Abundance, Composition, and Size*, The Astronomical Journal, 163, 145, [DOI link](#), [arXiv link](#), 18 citations
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29. Bhowmik, T. ; Boccaletti, A. ; Thébaud, P. et al. (2019), *Spatially resolved spectroscopy of the debris disk HD 32297. Further evidence of small dust grains*, Astronomy and Astrophysics, 630, A85, [DOI link](#), [arXiv link](#), 31 citations
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32. Engler, N. ; Boccaletti, A. ; Schmid, H. M. et al. (2019), *Investigating the presence of two belts in the HD 15115 system*, Astronomy and Astrophysics, 622, A192, [DOI link](#), [arXiv link](#), 31 citations
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34. Leboulleux, L. ; Sauvage, J. -F. ; Pueyo, L. A. et al. (2018), *Pair-based Analytical model for Segmented Telescopes Imaging from Space for sensitivity analysis*, Journal of Astronomical Telescopes, Instruments, and Systems, 4, 035002, [DOI link](#), [arXiv link](#), 20 citations
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36. Jensen-Clem, R. ; Mawet, D. ; Gomez Gonzalez, C. A. et al. (2018), *A New Standard for Assessing the Performance of High Contrast Imaging Systems*, The Astronomical Journal, 155, 19, [DOI link](#), [arXiv link](#), 33 citations
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38. Delorme, J. R. ; Galicher, R. ; Baudoz, P. et al. (2016), *Focal plane wavefront sensor achromatization: The multireference self-coherent camera*, Astronomy and Astrophysics, 588, A136, [DOI link](#), [arXiv link](#), 19 citations
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PRINCIPAUX ACTES DE CONFERENCES

1. Gutierrez, Y. ; **Mazoyer, J.** ; Herscovici-Schiller, O. et al. (2024), *A deep reinforcement learning approach to wavefront control for exoplanet imaging*, Space Telescopes and Instrumentation 2024: Optical, Infrared, and Millimeter Wave, 13092, 130926H, [DOI link](#), [arXiv link](#), 1 citation
2. **Mazoyer, J.** ; Goulas, C. ; Vidal, F. et al. (2024), *Upgrading SPHERE with the second stage AO system SAXO+: non-common path aberrations estimation and correction*, Ground-based and Airborne Instrumentation for Astronomy X, 13096, 130969D, [DOI link](#)
3. Fogarty, K. ; Mawet, D. ; **Mazoyer, J.** et al. (2020), *Towards high throughput and low-order aberration robustness for vortex coronagraphs with central obstructions*, Space Telescopes and Instrumentation 2020: Optical, Infrared, and Millimeter Wave, 11443, 114433Y, [DOI link](#), 1 citation
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5. Fogarty, K. ; **Mazoyer, J.** ; St. Laurent, K. et al. (2018), *Optimal deformable mirror and pupil apodization combinations for apodized pupil Lyot coronagraphs with obstructed pupils*, Space Telescopes and Instrumentation 2018: Optical, Infrared, and Millimeter Wave, 10698, 106981J, [DOI link](#), 2 citations
6. Ruane, G. ; Riggs, A. ; **Mazoyer, J.** et al. (2018), *Review of high-contrast imaging systems for current and future ground- and space-based telescopes I: coronagraph design methods and optical performance metrics*, Space Telescopes and Instrumentation 2018: Optical, Infrared, and Millimeter Wave, 10698, 106982S, [DOI link](#), [arXiv link](#), 16 citations
7. **Mazoyer, J.** ; Pueyo, L. ; N'Diaye, M. et al. (2017), *Capabilities of ACAD-OSM, an active method for the correction of aperture discontinuities*, Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series, 10400, 104000G, [DOI link](#), [arXiv link](#), 2 citations
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9. Leboulleux, L. ; N'Diaye, M. ; **Mazoyer, J.** et al. (2017), *Comparison of wavefront control algorithms and first results on the high-contrast imager for complex aperture telescopes (hicat) testbed*, Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series, 10562, 105622Z, [DOI link](#)
10. Fogarty, K. ; Pueyo, L. ; **Mazoyer, J.** et al. (2017), *Tip/tilt optimizations for polynomial apodized vortex coronagraphs on obscured telescope pupils*, Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series, 10400, 104000T, [DOI link](#), 2 citations
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12. **Mazoyer, J.** ; Pueyo, L. ; Norman, C. et al. (2015), *Active compensation of aperture discontinuities for WFIRST- AFTA: analytical and numerical comparison of propagation methods and preliminary results with an AFTA like pupil*, Nancy Grace Roman Space Telescope Technical Report WFIRST-STScI-TR1505, WFIRST-STScI-TR1505
13. **Mazoyer, J.** ; Pueyo, L. ; Norman, C. et al. (2015), *Active correction of aperture discontinuities (ACAD) for space telescope pupils: a parametric analysis*, Techniques and Instrumentation for Detection of Exoplanets VII, 9605, 96050M, [DOI link](#), [arXiv link](#), 10 citations
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15. **Mazoyer, J.** ; Galicher, R. ; Baudoz, P. et al. (2014), *Deformable mirror interferometric analysis for the direct imagery of exoplanets*, Adaptive Optics Systems IV, 9148, 914846, [DOI link](#), [arXiv link](#), 2 citations
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20. Baudoz, P. ; **Mazoyer, J.** ; Mas, M. et al. (2012), *Dark hole and planet detection: laboratory results using the self-coherent camera*, Ground-based and Airborne Instrumentation for Astronomy IV, 8446, 84468C, [DOI link](#), 11 citations
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AUTRES ACTES DE CONFERENCES

1. Stadler, E. ; Schreiber, L. ; Cortecchia, F. et al. (2024), *Upgrading SPHERE with the second-stage adaptive optics system SAXO+: conceptual design of the opto-mechanical module*, Adaptive Optics Systems IX, 13097, 130976S, [DOI link](#), 1 citation
2. Goulas, C. ; Galicher, R. ; Vidal, F. et al. (2024), *Upgrading SPHERE with the second stage AO system SAXO+: exploration of the parameter space with end-to-end numerical simulations*, Adaptive Optics Systems IX, 13097, 1309769, [DOI link](#)
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4. Potier, A. ; Riggs, A. J. E. ; Ruane, G. et al. (2024), *Revisiting the Borde-Traub focal plane wavefront estimation technique for exoplanet direct imaging*, Space Telescopes and Instrumentation 2024: Optical, Infrared, and Millimeter Wave, 13092, 130926E, [DOI link](#)

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