

François Mernier, Ph.D.

ESA Research Fellow
(European Space Agency)

European Space Research & Technology Centre (ESTEC)
Keplerlaan 1,
NL-2201 AZ Noordwijk
(The Netherlands)

Phone: +31 71 565 6299

Email: francois.mernier@esa.int

URL: <https://www.francoismernier.com>

(ESA Cosmos: <https://www.cosmos.esa.int/web/personal-profiles/francois-mernier>)

First author publications

- **Mernier, F.**, and Biffi, V.
Chemical enrichment in groups and clusters
in press, Springer Nature as book chapter of "Handbook of X-ray and Gamma-ray astrophysics"
- **Mernier, F.**, Werner, N., Su, Y., Pinto, C., Grossov'a, R., Simionescu, A., Iodice, E., Sarzi, M., and Görgei, A.
The cycle of metals in the infalling elliptical galaxy NGC1404
2022, MNRAS, **511**, 3159
- **Mernier, F.**, Cucchetti, E., Tornatore, L., Biffi, V., Pointecouteau, E., Clerc, N., Peille, P., Rasia, E., Barret, D., Borgani, S., Bulbul, E., Dauser, T., Dolag, K., Ettori, S., Gaspari, M., Pajot, F., Roncarelli, M., and Wilms, J.
Constraining the origin and models of chemical enrichment in galaxy clusters using the Athena X-IFU
2020b, A&A, **642**, A90
- **Mernier, F.**, Werner, N., Lakhchaura, K., de Plaa, J., Gu. L., Kaastra, J. S., Mao, J., Simionescu, A., and Urdampilleta, I.
How do atomic code uncertainties affect abundance measurements in the intracluster medium?
2020a, Astron. Nachr., **341**, 203
- **Mernier, F.**, Werner, N., Bagchi, J., Simionescu, A., Böhringer, H., Allen, S. W., and Jacob, J.
Magnetic fields and extraordinarily bright radio emission in the X-ray faint galaxy group MRC 0116+111
2019, MNRAS, **486**, 5430
- **Mernier, F.**, Biffi, V., Yamaguchi, H., Medvedev, P., Simionescu, A., Ettori, S.; Werner, N., Kaastra, J. S., de Plaa, J., and Gu, L.
Enrichment of the hot intracluster medium: observations
2018c, Space Sci. Rev., **214**, 129

- **Mernier, F.**, Werner, N., de Plaa, J., Kaastra, J. S., Raassen, A. J. J., Gu, L.; Mao, J., Urdampilleta, I., and Simionescu, A.
Solar chemical composition in the hot gas of cool-core ellipticals, groups, and clusters of galaxies
2018b, MNRAS: Letters, **480**, L95
- **Mernier, F.**, de Plaa, J., Werner, N., Kaastra, J. S., Raassen, A. J. J., Gu, L.; Mao, J., Urdampilleta, I., Truong, N., and Simionescu, A.
Mass-invariance of the iron enrichment in the hot haloes of massive ellipticals, groups, and clusters of galaxies
2018a, MNRAS: Letters, **478**, L116
- **Mernier, F.**, de Plaa, J., Kaastra, J. S., Zhang, Y.-Y., Akamatsu, H., Gu, L., Kosec, P., Mao, J., Pinto, C., Reiprich, T. H., Sanders J. S., Simionescu, A., and Werner, N.
Radial metal abundance profiles in the intra-cluster medium of cool-core galaxy clusters, groups, and ellipticals
2017, A&A, **603**, A80
- **Mernier, F.**, de Plaa, J., Pinto, C., Kaastra, J. S., Kosec, P., Zhang, Y.-Y., Mao, J., Werner, N., Pols, O. R., and Vink, J.
Origin of central abundances in the hot intra-cluster medium - II. Chemical enrichment and supernova yield models
2016b, A&A, **595**, A126
- **Mernier, F.**, de Plaa, J., Pinto, C., Kaastra, J. S., Kosec, P., Zhang, Y.-Y., Mao, J., and Werner, N.
Origin of central abundances in the hot intra-cluster medium - I. Individual and average abundance ratios from XMM-Newton EPIC
2016a, A&A, **592**, A157
- **Mernier, F.**, de Plaa, J., Lovisari, L., Pinto, C., Zhang, Y.-Y., Kaastra, J. S., Werner, N., and Simionescu, A.
Abundance and temperature distributions in the hot intra-cluster gas of Abell4059
2015, A&A, **575**, A37
- **Mernier, F.**, and Rauw, G.
An XMM-Newton view of the M17 nebula
2013, New Astron., **20**, 42

Co-author publications

- Gu, L., Shah, C., Mao, J., Raassen, A. J. J., de Plaa, J., Pinto, C., Akamatsu, H., Werner, N., Simionescu, A., Mernier, F., Sawada, M., Mohanty, P., Amaro, P., Gu, M. F., Porter, F. S., López-Urrutia, J. R. C., and Kaastra, J. S.
X-ray spectra of the Fe-L complex. III. Systematic uncertainties in atomic data
2022, A&A, **664**, A62
- Mao, J., Zhou, P., Simionescu, A., Su, Y., Fukazawa, Y., Gu, L., Akamatsu, H., Zhu, Z., de Plaa, J., **Mernier, F.**, and Kaastra, J. S.
Elemental Abundances of the Hot Atmosphere of Luminous Infrared Galaxy Arp 299
2021, ApJL, **918**, L17

- Gastaldello, F., Simionescu, A., **Mernier, F.**, Biffi, V., Gaspari, M., Sato, K., and Matsushita, K.
The Metal Content of the Hot Atmospheres of Galaxy Groups
2021, Universe, **7**, 208
- Urdampilleta, I., Simionescu, A., Kaastra, J. S., Zhang, X., Di Gennaro, G., **Mernier, F.**, de Plaa, J., Brunetti, G.
X-ray study of Abell 3365 with XMM-Newton
2021, A&A, **646**, A95
- Gu, L., Shah, C., Mao, J., Raassen, A. J. J., de Plaa, J., Pinto, C., Akamatsu, H., Werner, N., Simionescu, A., **Mernier, F.**, Sawada, M., Mohanty, P., Amaro, P., Gu, M. F., Porter, F. S., Crespo López-Urrutia, J. R., and Kaastra, J. S.
X-ray spectra of the Fe-L complex. II. Atomic data constraints from the EBIT experiment and X-ray grating observations of Capella
2020, A&A, **641**, A93
- Werner, N., and **Mernier, F.**
Hot atmospheres of galaxies, groups, and clusters of galaxies
2020, "Reviews in Frontiers of Modern Astrophysics : From Space Debris to Cosmology" (eds : Kabath, Jones & Skarka; published by Springer Nature)
- Breuer, J. P., Werner, N., **Mernier, F.**, Mroczkowski, T., Simionescu, A., Clarke, T. E., ZuHone, J. A., and Di Mascolo, L.
The mergers in Abell 2256 : displaced gas and its connection to the radio-emitting plasma
2020, MNRAS, **495**, 5014
- Grossová, R., Werner, N., Rajpurohit, K., **Mernier, F.**, Lakhchaura, K., Gabányi, K., Canning, R. E. A., Nulsen, P., Massaro, F., Sun, M., Connor, T., King, A., Allen, S. W., Frisbie, R. L. S., Donahue, M., and Fabian, A. C.
Powerful AGN jets and unbalanced cooling in the hot atmosphere of IC 4296
2019, MNRAS, **488**, 1917
- Urdampilleta, I., **Mernier, F.**, Kaastra, J. S., Simionescu, A., de Plaa, J., Kara, S., and Ercan, E. N.
Iron abundance distribution in the hot gas of merging galaxy clusters
2019, A&A, **629**, A31
- Mao, J., **Mernier, F.**, Kaastra, J. S., Gu, L., Mehdipour, M., and de Plaa, J.
The impact of improved plasma diagnostics on modeling the X-ray Universe
2019, JINST, **14**, C07012
- Su, Y., Kraft, R. P., Nulsen, P. E. J., Jones, C., Maccarone, T. J., **Mernier, F.**, Lovisari, L., Sheardown, A., Randall, S. W., Roediger, E., Fish, T. M., Forman, W. R., and Churazov, E.
Extended X-Ray Study of M49: The Frontier of the Virgo Cluster
2019, AJ, **158**, 6
- Gu, L., Akamatsu, H., Shimwell, T. W., Intema, H. T., van Weeren, R. J., de Gasperin, F., **Mernier, F.**, Mao, J., Urdampilleta, I., de Plaa, J., Parekh, V., Röttgering, H. J. A., and Kaastra, J. S.
Observations of a pre-merger shock in colliding clusters of galaxies
2019, Nature Astronomy, **3**, 838

- Gu, L., Raassen, A. J. J., Mao, J., de Plaa, J., Shah, C., Pinto, C., Werner, N., Simionescu, A., **Mernier, F.**, and Kaastra, J. S.
X-ray spectra of the Fe-L complex
2019, A&A, **627**, A51
- Truong, N., Rasia, E., Biffi, V., **Mernier, F.**, Werner, N., Gaspari, M., Borgani, S., Planelles, S., Fabjan, D., and Murante, G.
Mass-Metallicity Relation from Cosmological Hydrodynamical Simulations and X-ray Observations of Galaxy Groups and Clusters
2019, MNRAS, **484**, 2896
- Lakhchaura, K., **Mernier, F.**, and Werner, N.
Possible depletion of metals into dust grains in the core of the Centaurus cluster of galaxies
2019, A&A, **623**, A17
- Simionescu, A., Nakashima, S., Yamaguchi, H., Matsushita, K., **Mernier, F.**, Werner, N., Tamura, T., Nomoto, K., de Plaa, J., Bamba, A., Bulbul, E., Ezoe, Y., Fabian, A. C., Fukazawa, Y., Gu, L., Ichinohe, Y., Ishigaki, M. N., Kaastra, J. S., Kilbourne, C., Kitayama, T., Leung, S.-C., Leutenegger, M., Loewenstein, M., Maeda, Y., Miller, E. D., Mushotzky, R. F., Noda, H., Pinto, C., Porter, F. S., Safi-Harb, S., Sato, K., Takahashi, T., Ueda, S., and Zha, S.
Constraints on the Chemical Enrichment History of the Perseus Cluster of Galaxies from High-Resolution X-ray Spectroscopy
2019, MNRAS, **483**, 1701
- Mao, J., de Plaa, J., Kaastra, J. S., Pinto, C., Gu, L., **Mernier, F.**, Hong-Liang, Y., Zhang, Y.-Y., and Akamatsu, H.
Nitrogen abundance in X-ray halos of clusters and groups of galaxies
2019, A&A, **621**, A9
- Biffi, V., **Mernier, F.**, and Medvedev, P.
Enrichment of the hot intracluster medium: simulations
2018, Space Sci. Rev., **214**, 123
- Urdampilleta, I., Akamatsu, H., **Mernier, F.**, Kaastra, J. S., de Plaa, J., Ohashi, T., Ishisaki, Y., and Kawahara, H.
X-ray study of the double radio relic Abell 3376 with Suzaku
2018, A&A, **618**, A74
- Kaastra, J. S., Gu, L., Mao, J., Mehdipour, M., **Mernier, F.**, de Plaa, J., Raassen, A. J. J., and Urdampilleta, I.
Science with hot astrophysical plasmas
2017, JINST, **12**, C08008
- de Plaa, J., Kaastra, J. S., Werner, N., Pinto, C., Kosec, P., **Mernier, F.**, Lovisari, L., Akamatsu, H., Schellenberger, G., Hofmann, F., Reiprich, T. H., Finoguenov, A., Ahoranta, J., Sanders, J. S., Fabian, A. C., Pols, O. R., Simionescu, A., Vink, J., and Böhringer, H.
CHEERS: The chemical evolution RGS sample
2017, A&A, **607**, A98
- Albert, J. G., Sifón, C., Stroe, A., **Mernier, F.**, Intema, H. T., Röttgering, H. J. A., and Brunetti, G.
Complex Diffuse Emission in the $z=0.52$ Cluster PLCK G004.5-19.5
2017, A&A, **607**, A4

- Akamatsu, H., Fujita, Y., Akahori, T., Ishisaki, Y., Hayashida, K., Hoshino, A., **Mernier, F.**, Yoshikawa, K., Sato, K., and Kaastra, J. S.
Properties of the cosmological filament between two clusters: A possible detection of a large-scale accretion shock by Suzaku
2017, A&A, **606**, A1
- de Plaa, J., and **Mernier, F.**
CHEERS: Future perspectives for abundance measurements in clusters with XMM-Newton
2017, Astron. Nachr., **338**, 299
- Akamatsu, H., Gu, L., Shimwell, T., **Mernier, F.**, Mao, J., Urdampilleta, I., de Plaa, J., Röttgering, H. J. A., and Kaastra, J. S.
Suzaku and XMM-Newton observations of the newly discovered early-stage cluster merger 1E2216.0-0401 and 1E2215.7-0404
2016, A&A, **593**, L7
- Ichinohe, Y., Werner, N., Simionescu, A., Allen, S. W., Canning, R. E. A., Elhert, S., **Mernier, F.**, and Takahashi, T.
The growth of the galaxy cluster Abell 85: mergers, shocks, stripping and seeding of clumping
2015, MNRAS, **448**, 2971

Selected proceedings

- **Mernier, F.**, de Plaa, J., Kaastra, J. S., Zhang, Y., Akamatsu, H., Gu, L., Mao, J., Pinto, C., Reiprich, T., and Sanders, J.
Radial distribution of metals in the hot intra-cluster medium as observed by XMM-Newton
Proc. “The X-ray Universe 2017”, Rome (Italy), June 6-9, 2017, ed. J.-U. Ness and S. Migliari, p.148
- **Mernier, F.**, de Plaa, J., Pinto, C., Kaastra, J. S., Kosec, P., Zhang, Y.-Y., Mao, J., and Werner, N.
Chemical enrichment in the hot intra-cluster medium seen with XMM-Newton/EPIC
Proc. “XMM-Newton: The Next Decade”, Madrid (Spain), May 9-11, 2016, ed. J.-U. Ness, id.102
- **Mernier, F.**, Lovisari, L., Pinto, C., de Plaa, J., and Kaastra, J. S.
An XMM-Newton view of Abell 4059
Proc. “The X-ray universe 2014”, Dublin (Ireland), Jun 16-19, 2014, ed. J.-U. Ness, id.136

Last updated: September 13, 2022