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 Abell 4059 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

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
  - 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: March 1, 2022