

# List of publications

Éric Buchlin

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## 1 Thesis

- [1] **Buchlin, É.** (2004). *Signatures et modélisations du chauffage coronal turbulent à micro-échelles — Modelli ed osservazioni di turbolenza a piccola scala nel riscaldamento della corona solare*. PhD thesis, Univ. Paris-Sud and Univ. of Florence.
- [2] **Buchlin, É.** (2014). *Dynamique turbulente de la couronne et du vent solaires*. Habilitation thesis, Univ. Paris-Sud.

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## 2 Refereed papers

- [3] **Buchlin, É.**, Aletti, V., Galtier, S., Velli, M., Einaudi, G. and Vial, J.-C. (2003). A simplified numerical model of coronal energy dissipation based on reduced MHD. *Astron. Astrophys.*, **406**, 1061–1070, doi:[10.1051/0004-6361:20030730](https://doi.org/10.1051/0004-6361:20030730).
- [4] **Buchlin, É.**, Galtier, S. and Velli, M. (2005). Influence of the definition of dissipative events on their statistics. *Astron. Astrophys.*, **436**, 355–362, doi:[10.1051/0004-6361:20042360](https://doi.org/10.1051/0004-6361:20042360).
- [5] **Buchlin, É.**, Vial, J.-C. and Lemaire, P. (2006). A statistical study of SUMER spectral images: events, turbulence, and intermittency. *Astron. Astrophys.*, **451**, 1091–1099, doi:[10.1051/0004-6361:20054424](https://doi.org/10.1051/0004-6361:20054424).
- [6] Parenti, S., **Buchlin, É.**, Cargill, P. J., Galtier, S. and Vial, J.-C. (2006). Modelling the radiative signatures of turbulent heating in coronal loops. *Astrophys. J.*, **651**, 1219–1228, doi:[10.1086/507594](https://doi.org/10.1086/507594).
- [7] Galtier, S. and **Buchlin, É.** (2007). Multi-scale Hall-MHD turbulence in the solar wind. *Astrophys. J.*, **656**, 560–566, doi:[10.1086/510423](https://doi.org/10.1086/510423).
- [8] **Buchlin, É.** and Velli, M. (2007). Shell-models of RMHD turbulence and the heating of solar coronal loops. *Astrophys. J.*, **662**, 701–714, doi:[10.1086/512765](https://doi.org/10.1086/512765).
- [9] **Buchlin, É.**, Cargill, P. J., Bradshaw, S. J. and Velli, M. (2007). Profiles of heating in turbulent coronal magnetic loops. *Astron. Astrophys.*, **469**, 347–354, doi:[10.1051/0004-6361:20077111](https://doi.org/10.1051/0004-6361:20077111).
- [10] **Buchlin, É.** (2007). Intermittent heating of the solar corona by MHD turbulence. *Nonlin. Proc. Geophys.*, **14**, 649–654, doi:[10.5194/npg-14-649-2007](https://doi.org/10.5194/npg-14-649-2007).
- [11] Verdini, A., Velli, M. and **Buchlin, É.** (2009). Turbulence in the sub-Alfvénic solar wind driven by reflection of low-frequency Alfvén waves. *Astrophys. J. Lett.*, **700**, 39–42, doi:[10.1088/0004-637X/700/1/L39](https://doi.org/10.1088/0004-637X/700/1/L39).

- [12] **Buchlin, É.** and Vial, J.-C. (2009). Electron density in the quiet solar transition region from SoHO/SUMER measurements of S VI line radiance and opacity. *Astron. Astrophys.*, **503**, 559–568, doi:[10.1051/0004-6361/200811588](https://doi.org/10.1051/0004-6361/200811588).
- [13] Galtier, S. and **Buchlin, É.** (2010). Nonlinear diffusion equations for anisotropic MHD turbulence with cross-helicity. *Astrophys. J.*, **722**, 1977–1983, doi:[10.1088/0004-637X/722/2/1977](https://doi.org/10.1088/0004-637X/722/2/1977).
- [14] **Buchlin, É.** (2011). Intermittent turbulent dynamo at very low and high magnetic Prandtl numbers. *Astron. Astrophys.*, **534**, L9, doi:[10.1051/0004-6361/201117890](https://doi.org/10.1051/0004-6361/201117890).
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- [16] Boutry, C., **Buchlin, É.**, Vial, J.-C. and Régnier, S. (2012). Flows at the edge of an active region: observation and interpretation. *Astrophys. J.*, **752**, 13, doi:[10.1088/0004-637X/752/1/13](https://doi.org/10.1088/0004-637X/752/1/13).
- [17] Teriaca, L., Andretta, V., Auchère, F., Brown, C. M., **Buchlin, É.**, Cauzzi, G., Culhane, J. L., Curdt, W., Davila, J. M., Del Zanna, G., Doschek, G. A., Fineschi, S., Fludra, A., Gallagher, P. T., Green, L., Harra, L. K., Imada, S., Innes, D., Kliem, B., Korendyke, C., Mariska, J. T., Martínez-Pillet, V., Parenti, S., Patsourakos, S., Peter, H., Poletto, L., Rutten, R., Schühle, U., Siemer, M., Shimizu, T., Socas-Navarro, H., Solanki, S. K., Spadaro, D., Trujillo-Bueno, J., Tsuneta, S., Dominguez, S. V., Vial, J.-C., Walsh, R., Warren, H. P., Wiegmann, T., Winter, B. and Young, P. (2012). LEMUR: Large European Module for Solar Ultraviolet Research. *Exp. Astron.*, **34**, 273-309, doi:[10.1007/s10686-011-9274-x](https://doi.org/10.1007/s10686-011-9274-x).
- [18] Froment, C., Auchère, F., Bocchialini, K., **Buchlin, É.**, Guennou, C. and Solomon, J. (2015). Evidence for evaporation-incomplete condensation cycles in warm coronal loops. *Astrophys. J.*, **807**, 158, doi:[10.1088/0004-637X/807/2/158](https://doi.org/10.1088/0004-637X/807/2/158).
- [19] Joulin, V., **Buchlin, É.**, Solomon, J. and Guennou, C. (2016). Energetic characterisation and statistics of solar coronal brightenings. *Astron. Astrophys.*, **591**, A148, doi:[10.1051/0004-6361/201526254](https://doi.org/10.1051/0004-6361/201526254).
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- [27] Galtier, S., Nazarenko, S. V., **Buchlin, É.** and Thalabard, S. (2019). Nonlinear Diffusion Models for Gravitational Wave Turbulence. *Phys. D*, **390**, 84, doi:[10.1016/j.physd.2019.01.007](https://doi.org/10.1016/j.physd.2019.01.007).
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- [155] Zhang, P., Vial, J.-C. and **Buchlin, É.** An analysis of simultaneous observations of a CME-associated eruptive prominence with IRIS, AIA/SDO, EUVI/STEREO and K-COR. Oral presentation (J.-C. Vial), *42nd COSPAR Scientific Assembly*, Pasadena, California, July 2018.
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- [157] Zambrana Prado, N. and **Buchlin, É.** A new method for measuring relative abundances in the solar corona. Poster, *Hinode 12: The Many Suns*, Granada, Spain, September 2018.
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- [162] Hazra, S., Brun, A. S., **Buchlin, É.**, Réville, V., Strugarek, A. and Perri, B. Preparing solar wind models and data for Solar Orbiter. Poster, *SCOSTEP VarSITI Closing Symposium*, Sofia, Bulgaria, June 2019.



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- [164] Bernoux, G., Brunet, A., Janvier, M. and **Buchlin, É.** Assessing the predictability of the geomagnetic activity with information theoretical tools. *16th European Space Weather Week*, Liège, Belgium, November 2019.
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- [246] **Buchlin, É.** and the MEDOC team. Données solaires, produits et outils à MEDOC. Oral presentation, *Semaine de l’Astrophysique Française*, Lyon, France, June 2016.
- [247] **Buchlin, É.** 20 ans du CDDP, 20 ans de MEDOC. Oral presentation, *20 ans du CDDP*, Toulouse, France, October 2018.
- [248] **Buchlin, É.**, Caminade, S., Auchère, F., Parenti, S., Pelouze, G., Perri, B., Traoré, N., Gréau, A., Chane-Yook, M., Mercier, C., Dexet, M., Janvier, M., Boumier, P., Baudin, F., Bocchialini, K., Paletou, F., Roudier, T., Aulanier, G., Grappin, R., Pantellini, F., Ballans, H., Massias, C., Poulleau, G. and Dufourg, N. Solar data, data products, and tools at MEDOC. Oral presentation, *Colloque du Programme National Soleil-Terre*, Marseille, France, May 2022.
- [249] Chane-Yook, M., Paletou, F., Labrosse, N. and **Buchlin, É.** Non-LTE radiative transfer codes (1D and 2D) in solar and stellar structures. Poster, *Colloque du Programme National Soleil-Terre*, Marseille, France, May 2022.
- [250] Parenti, S., Réville, V., Brun, A. S., Pinto, R. F., Auchère, F., **Buchlin, É.**, Perri, B. and Strugarek, A. Validation of a wave heated 3D MHD coronal-wind model using polarized brightness and EUV observations. Oral presentation (S. Parenti), *Colloque du Programme National Soleil-Terre*, Marseille, France, May 2022.
- [251] Bernoux, G., Brunet, A., **Buchlin, É.**, Janvier, M. Sicard, A. Peut-on prévoir l’activité géomagnétique avec plusieurs jours d’avance en utilisant uniquement des réseaux de neurones pilotés par des images du Soleil? Oral presentation (G. Bernoux), *Colloque du Programme National Soleil-Terre*, Marseille, France, May 2022.
- [252] **Buchlin, É.**, Caminade, S., Auchère, F., Parenti, S., Pelouze, G., Perri, B., Traoré, N., Gréau, A., Chane-Yook, M., Mercier, C., Dexet, M., Janvier, M., Boumier, P., Baudin, F., Bocchialini, K., Ballans, H., Massias, C., Poulleau, G. and Dufourg, N. Solar data, data products, and tools at MEDOC. Poster, *Semaine de l’Astrophysique Française*, Besançon, France, June 2022.
- [253] Janvier, M., Parenti, S. and **Buchlin, É.** Suivi pro/amateurs du Soleil lors de la campagne d’observations Solar Orbiter à l’automne 2022. Poster, *Semaine de l’Astrophysique Française*, Besançon, France, June 2022.

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## 5 Workshops and summer schools

### 5.1 Oral presentations

- [254] Statistical approaches of small-scale coronal heating. Summer school *Basic processes of turbulent plasmas*, Chalkidiki, Greece, September 2003.
- [255] Observations de petits événements coronaux avec SUMER, et définitions d’événements. *Atelier du Programme national Soleil-Terre*, Autrans, France, January 2004.
- [256] Events and intermittency from time series of energy dissipation. Summer school *Analysis techniques for turbulent plasmas*, Copanello, Italy, September 2004.
- [257] Signatures of nanoflares and turbulence observed in EUV by SOHO/SUMER. *Four Solar Cycles of Space Instrumentation, in honour of Philippe Lemaire’s retirement*, Orsay, France, November 2004.
- [258] Numerical methods and parallel techniques used in a model of MHD turbulence in a solar coronal loop. “*Grand Challenge Problems in Computational Astrophysics*” *Culminating Conference*, Lake Arrowhead, California, June 2005 (**invited**).

- [259] Shell-model simulations of MHD turbulence in a solar coronal loop. Summer school *Turbulence and Fine Scale Structure in Solar and Astrophysical Plasmas*, Montegufoni, Italy, October 2005.
- [260] Turbulent heating in the solar corona and turbulence in the solar wind. “*Grand Challenge Problems in Computational Astrophysics*” 1st Reunion Conference, Lake Arrowhead, California, December 2006 (**invited**).
- [261] Numerical simulations of coronal heating. *ISSI team on Coronal Heating*, Bern, Switzerland, February 2007.
- [262] Observation de la turbulence dans la couronne solaire. Journée scientifique *Turbulence dans les plasmas spatiaux: aspects expérimentaux*, Université Pierre et Marie Curie, Paris, France, February 2007 (**invited**).
- [263] Heating and cooling model of a coronal loop. *ISSI team on Coronal Heating*, Bern, Switzerland, October 2007.
- [264] Heating and cooling of the solar corona. “*Grand Challenge Problems in Computational Astrophysics*” 2nd Reunion Conference, Lake Arrowhead, California, December 2007 (**invited**).
- [265] Latest results from the coronal loop model. *ISSI team on Coronal Heating*, Bern, Switzerland, January 2009.
- [266] New Solar Weather Products from Université Paris-Saclay. *ESA SWE Service Network Workshop* (online), October 2020 (**invited**).
- [267] Space solar physics data and VO services at MEDOC. *Annual meeting of the International Heliophysics Data Environment Alliance* (online), October 2020.
- [268] Solar Orbiter remote-sensing data hands-on. *Les Houches Solar Orbiter school* (online), April 2021.
- [269] Solar weather products from MEDOC/Université Paris-Saclay. *ESA SWE Service Network Workshop*, Darmstadt, Germany, May 2022 (**invited**).
- [270] EUI and SPICE data tutorial. *Solar Orbiter summer school 2022: a multi-instruments mission to the Sun*, Sète, France, May 2022.
- [271] SPICE data tutorial. *8th Solar Orbiter Workshop*, Belfast, September 2022.

## 5.2 Posters

- [272] Chauffage turbulent dans la couronne solaire. *Journées Jeunes Chercheurs CNES*, Toulouse, France, October 2008 (**invited**).

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## 6 Books and parts of books

- [273] Corrected Centrale-Supélec admission examination. *Annales des concours 2008* (collective), H&K, Paris, France.

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## 7 Internal reports

- [274] **Buchlin, É.** (2000). *Recent Observations of an Equatorial Coronal Hole*. Internship report, ENS Paris and Southwest Research Institute, Boulder.

- [275] **Buchlin, É.** (2001). *Simulations d'événements solaires par automates cellulaires et propriétés statistiques*. Report of "DEA" internship, Institut d'Astrophysique Spatiale, École Doctorale Astronomie & Astrophysique d'Île-de-France, Paris.
- [276] Basa, S., **Buchlin, É.**, Ceccarelli, C., Désert, F.-X., Dudok de Wit, T., Hameury, J.-M., Leblanc, F., Le Fèvre, O., Maurice, S., Pointecouteau, É., Reynaud, S., Rouan, D., Soubiran, C. and Tobie, G. (2015). Groupe D: Lien avec la prospective spatiale 2015-2020. In *Document de prospective en Astronomie et Astrophysique 2015-2020*, CNRS-INSU.

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## 8 Numerical simulation code

- [277] **Buchlin, É.**, Velli, M. and Verdini, A. The SHELL-ATM code. Under GPL license, with manual (65 pages).

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## 9 Other publications

- [278] **Buchlin, É.**, with Bessière, M. (2004). *Le 8 juin 2004: la planète Vénus passera devant le Soleil*. Press release of Paris Sud University.
- [279] **Buchlin, É.**, with Degrez, G. (2004). *Vénus Beauté. Plein Sud, le magazine d'information de l'Université Paris Sud*, 58, May-June 2004.
- [280] Parenti, S. and **Buchlin, É.** (2005). Chauffage de la couronne solaire par micro-éruptions. SF2A 2005 press conference, Observatoire astronomique, Université Louis Pasteur, Strasbourg, France.
- [281] **Buchlin, É.** (2008). Interest in policy: new imperative for young scientists? Oral presentation, *EuroScience Open Forum*, Barcelona, Spain.
- [282] Personal web site: <http://eric.buchlin.org/>, and some other web sites for associations.
- [283] **Buchlin, É.** (2012). La couronne solaire: du calme à la tempête. Oral presentation, La Coupole, centre d'histoire et de mémoire du Nord-Pas-de-Calais, Saint-Omer, France, 19 October 2012.
- [284] **Buchlin, É.** (2014). La couronne solaire: du calme à la tempête. Oral presentation and observation, Collège Louis Pasteur, Longjumeau, France, 11 April 2014.
- [285] **Buchlin, É.** (2015). La couronne solaire: du calme à la tempête. Oral presentation and observation (Solar eclipse), Collège Juliette Adam, Gif-sur-Yvette, France, 20 March 2015.
- [286] **Buchlin, É.** (2016). La couronne solaire: du calme à la tempête. Oral presentation, Collège Juliette Adam, Gif-sur-Yvette, France, 19 May 2016; association ALCOR, Orsay, France, 23 novembre 2016.