

# Curriculum vitae of Axel Brandenburg

February 2, 2025

Born: 7 April 1959 in Heide, Federal Republic of Germany

Nationality: German

Marital status: married, 1 child

## Address

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<http://www.nordita.org/~brandenb>, <http://orcid.org/0000-0002-7304-021X>

## Education

Docent of Astronomy, University of Helsinki, March 1992

Dr. Phil., University of Helsinki, May 1990, Doctoral dissertation: *Challenges for solar dynamo theory:  $\alpha$ -effect, differential rotation and stability*, ISBN 952-90-1697-2

Lic. Phil., University of Helsinki, February 1989, Licentiate thesis: *Kinematic dynamo theory and the solar activity cycle*

Dipl. Phys., University of Hamburg, January 1986, Diploma thesis: *Hydrodynamics of convective bubbles in linear approximation*

## Employment

Jan 2007 – present: Professor of Astrophysics, Stockholm Observatory, NORDITA, Stockholm

Aug 2015 – Jul. 2018: Visiting Faculty, University of Colorado, Boulder (LASP, APS, and JILA)

Jan 2000 – Dec. 2006: Professor of Astrophysics, NORDITA, Copenhagen

Feb 1996 – Dec. 2000: Professor of Applied Mathematics, University of Newcastle upon Tyne

Dec 1994 – Jan. 1996: Nordic Assistant Professor, Nordita, Copenhagen

Dec 1992 – Nov. 1994: Postdoctoral Research Fellow, High Altitude Observatory/NCAR, Boulder

Aug 1992 – Nov. 1992: Visiting Fellowship, University of Cambridge

Sep 1990 – Aug. 1992: Postdoctoral Research Fellow, Nordita, Copenhagen

## Publications

Below the numbers of publications (published or in print) and the  $h$  indexes (from Web of science, ResearcherID: I-6668-2013), the Astrophysical Data Service (ADS), and Google Scholar (GS); see also:

<http://www.nordita.org/~brandenb/pub/node1.html>

Number of papers in refereed journals: 459 + 5 submitted

Number of invited conference reviews: 43

Number of communications to scientific meetings: 86

Total number of citations: 17069,  $h$ -index 65 (on Web of Science); 20784,  $h$ -index 70 (ADS); and 27505,  $h$ -index: 84 (on Google Scholar)

## Influential papers

*The second column refers to the paper number in the full list of publications,*

<http://norltx65.nordita.org/~brandenb/pub/node1.html>

Citations are from Web of Science (WoS), Astrophysical Data Service (ADS), and Google Scholar (GS).

paper:	#	citations		
		WoS	ADS	GS
Brandenburg & Subramanian (2005)	A.153	1186	1381	1895
Beck, Brandenburg et al. (1996)	A.58	801	883	1267
Brandenburg et al. (1995)	A.44	698	760	1095
Brandenburg (2001)	A.98	439	486	685
Brandenburg (2005)	A.145	354	341	438
Haugen, Brandenburg, & Dobler (2004)	A.133	269	302	401
Saar & Brandenburg (1999)	A.90	257	288	381
Brandenburg, Enqvist, & Olesen (1996)	A.54	231	276	349
Nordlund, Brandenburg, et al. (1992)	A.22	217	230	299
Brandenburg & Dobler (2002)	A.111	194	214	299
Brandenburg et al. (1996)	A.52	192	202	291
Dobler, Stix, & Brandenburg (2006)	A.159	177	203	289
Christensson, Hindmarsh, & Brandenburg (2001)	A.104	172	197	247
Brandenburg et al. (1989)	A.3	174	184	232
Korpi, Brandenburg, et al. (1999)	A.82	164	180	238
Blackman & Brandenburg (2002)	A.115	146	167	213
Rüdiger & Brandenburg (1995)	A.41	146	149	199

## PhD students

Stephen J. Brooks:	1996–2000	(Newcastle upon Tyne)
Alberto Bigazzi:	1996–2000	(Newcastle upon Tyne and L'Aquila, Rome)
Maarit J. Korpi:	1997–1999	(Oulu U)
Nils E. L. Haugen	2000–2004	(Trondheim, NTNU)
Tarek A. Yousef	2000–2004	(Trondheim, NTNU)
Antony J. Mee	2002–2006	(Newcastle upon Tyne, co-supervisor)
Simon Candelaresi	2009–2012	(Stockholm U, Phil. Lic. in Feb. 2011)
Fabio Del Sordo	2009–2012	(Stockholm U, Phil. Lic. in Feb. 2011)
Koen Kemel	2009–2012	(Stockholm U, Phil. Lic. in Aug 2011)
Jörn Warnecke	2009–2013	(Stockholm U, Phil. Lic. in May 2011)
Sarah Jabbari	2012–2016	(Stockholm U, Phil. Lic. in May 2014)
Illa R. Losada	2013–2019	(Stockholm U, Phil. Lic. in Dec 2014)
Xiang-Yu Li	2014–2018	(Stockholm U, Phil. Lic. in May 2016)
Alberto Roper Pol	2017–2020	(University of Colorado)
Yutong He	2020–2204	(Stockholm U, Phil. Lic. in Dec 2022)

Master students: Atefeh Barekat (2013), Nousaba Nasrin Protiti (2023)

Batchelor students: Julia Asplund (2019), Gustav Larsson (2023)

## Teaching experience

- *Advanced Astrophysical Fluid Dynamics* (7.5 ECTS) at Stockholm U, postgraduate level (2021)
- *Search for Life in the Universe* (44 hours) at CU-Boulder, for non-science majors (2017, spring+fall)
- *Fluid Instabilities, Waves, & Turbulence* (44 hours) at CU-Boulder, graduate level (2016)
- *Solar & Space Physics* (44 hours) at CU-Boulder, upper undergraduate level (2016)
- *Astrophysical Fluid Dynamics* (7.5 ECTS) at Stockholm U, postgraduate level (2013)

- *Astrophysical Magnetohydrodynamics* (7.5 ECTS) at Stockholm U, master level (2012)
- *Solar Physics and Magnetohydrodynamics* (7.5 ECTS) at Stockholm U, postgraduate level (2009)
- *Pencil Code tutorials*, taught in Trieste (Italy, 2009) and Aussois (France, 2009)
- *Solar Physics* (12 hours) at the IRF Kiruna (2005, 2006, 2007, 2008), postgraduate level
- *Planetary and Stellar Orbits* (24 hours) at University of Newcastle upon Tyne (1998, 1999, 2000), second year students
- *Introduction to Astrophysical Fluids* (24 hours) at University of Newcastle upon Tyne (1997, 1998, 1999), second year students
- *Fluid Flow and Cosmic Fluids* (24 hours) at University of Newcastle upon Tyne (1997, 1998, 1999), third year students
- *Relativistic Fluid Dynamics and Visualization* (24 hours) at Copenhagen University (1995/1996), shared with Åke Nordlund, postgraduate level

## Notable recognitions

- 2014 Elected foreign member of the Royal Swedish Academy of Sciences  
<https://www.kva.se/en/news/ny-ledamot-invalid-i-akademien-2-3/>
- 2019 Honorary professor of Ilia State University (Tbilisi/Georgia)
- 2019 Distinguished Fellow of NYUAD (Abu Dhabi)
- 2022 Jesús Serra Foundation visiting fellow at the Institute of Astrophysics of the Canary Islands

## Major grants

- VR project grant, “Stochastic Gravitational Wave Background from the Early Turbulent Universe” 2019-04234, January 2020 – December 2022, 4.00 MSEK (430 k\$, as PI)
- NSF Astronomy and Astrophysics Research Grants (AAG), “Collaborative research: A Comprehensive Theoretical Study of Cosmic Magnetic Fields their Origin, Evolution, and Signatures” 1615100, July 2016 – June 2019, 224 k\$ (as Co-I/Institutional PI; PI: Tina Kahniashvili, Carnegie Mellon University)
- Knut & Alice Wallenberg Foundation, “Bottlenecks for the growth of particles suspended in turbulent flows” January 2015 – December 2019, 44 MSEK (4.67 M\$, as Co-I)
- Research Council of Norway (RCN), FRINATEK research grant “Particle transport and clustering in turbulent flows” 231444, July 2014 – June 2017, 7.25 MNOK (1.18 M\$, as PI)
- VR breakthrough research grant, “Formation of active regions in the Sun” 2012-5797, January 2013 – December 2016, 4.2 MSEK (0.63 M\$, as PI)
- VR project grant, “Turbulent dynamo simulation in a spherical shell segment” 621-2011-5076, January 2012 – December 2014, 1.65 MSEK (0.25 M\$, as PI)
- ERC Advanced Grant, “Astrophysical Dynamos” No 227952, February 2009 – January 2014, 2.22 MEuro (2.8 M\$, as PI)
- PPARC Research Grant, “Accretion Discs and Jets” PPA/G/S/1997/00284, 1998 – 2001, 270 kGBP (0.42 M\$, as PI)

## Fields of research

Astrophysical fluid dynamics, with emphasis on dynamo and turbulence theories; astrobiology, with emphasis on homochirality. Particular interests: solar and stellar activity, helioseismology, convection, differential rotation, galactic turbulence and magnetism, accretion discs, fractals in turbulence, relativistic hydrodynamics, early universe, relic gravitational waves, magnetospheric physics.

## Organization of conferences and programs

Jan 2024 Program on Turbulence in Astrophysical Environments (KITP, Santa Barbara)  
Aug 2022 Program on Magnetic field evolution in low density or strongly stratified plasmas (Stockholm)  
Aug 2019 Program on Gravitational Waves from the Early-Universe (Stockholm)  
Jun 2018 14th Pencil Code User Meeting (Boulder)  
Jun 2015 Program on Origin, Evolution, and Signatures of Cosmological Magnetic Fields (Stockholm)  
Oct 2012 12th European Workshop on Astrobiology (Stockholm)  
Aug 2011 Program on Dynamo, Dynamical Systems and Topology (Stockholm)  
May 2011 Program on Predictability + School on Data Assimilation (Stockholm)  
Feb 2011 RädlerFest:  $\alpha$  effect and beyond (Stockholm)  
May 2010 Program on Turbulent combustion (Stockholm)  
Sep 2009 Program on Solar and Stellar Cycles (Stockholm)  
Mar 2008 Program on Turbulence and Dynamos (Stockholm)  
Feb 2008 Program on the Origins of Homochirality (Stockholm)  
Nov 2007 Joint Nordic and SwAN Astrobiology meeting (Stockholm)  
Aug 2007 3rd Pencil Code User Meeting (Stockholm)  
May 2007 New Trends in Radiation Hydrodynamics (Stockholm)  
Jan 2006 NorFA Winter School on Astrobiology (Levitunturi, Finnish Lapland)  
Jul 2005 Nordita Master Class in Physics (Hillerød)  
Jan 2005 Astrobiology and Origins of Life (Copenhagen)  
Jan 2005 Meeting on Nordic Science Outreach (Copenhagen)  
Sep 2004 Cosmic Ray Dynamics: from Turbulent to Galactic Scale Magnetic Fields (Copenhagen)  
Aug 2004 Astrobiological Problems for Physicists and Biologists (Turku, Finland)  
Jan 2004 Astrobiological Problems for Physicists (Copenhagen)  
Jul 2002 Nordita Master Class in Physics (Hillerød)  
Jul 2001 Nordita Master Class in Physics (Hillerød)  
Mar 2001 Dynamos in the Laboratory, Computer, and the Sky (Copenhagen)  
Jul 2000 Nordita Master Class in Physics (Copenhagen)  
Jan 2000 Physics of Accretion and Associated Outflows (Copenhagen)  
May 1997 UK-MHD meeting (Newcastle, England)  
Feb 1996 NorFA Winter School on Magnetic fields in Space and Astrophysics (Levitunturi, Finnish Lapland)

## Invited participation in research programs

Nov 2022 Frontiers in dynamo theory: from the Earth to the stars, 3 weeks (Cambridge)  
Jun 2019 Turbulent Life of Cosmic Baryons, 3 weeks (Aspen)  
Feb 2011 Turbulence Theory, 1 month (Santa Barbara)  
Jun 2008 Dynamo Theory, 1.5 month (Santa Barbara)  
Nov 2007 Star Formation through Cosmic Time, 1 month (Santa Barbara)  
Sep 2004 Magnetohydrodynamics of Stellar Interiors, 3 months (Cambridge)  
Jun 2002 Dynamo Theory, 3 weeks (Aspen)  
Jan 2002 Solar Magnetism and Related Astrophysics, 3 months (Santa Barbara)  
Apr 2000 Astrophysical Turbulence, 3 months (Santa Barbara)  
Jan 1998 Dynamics of Astrophysical Discs, 3 months (Cambridge)  
Aug 1992 Dynamo Theory, 3 months (Cambridge)

## Memberships

Finnish Physical Society (since 1988)  
International Astronomical Union (since 1990)  
American Physical Society (since 1996)  
European Astrobiology Network Association (since 2005)  
European Physical Society (since 2011)  
Member of the Royal Swedish Academy of Sciences (Astronomy and Space Science, 2014)

## Other academic activities

I am frequently consulted as a referee for the following journals: Astrophysical Journal, Astronomy & Astrophysics, Geophysical and Astrophysical Fluid Dynamics, Journal of Fluid Mechanics, Monthly Notices of the Royal Astronomical Society, Physical Review (PRL, PRD, and PRE), Physics of Plasmas, Journal of Computational Physics, Journal of Cosmology & Astroparticle Physics, New Journal of Physics. On the average my load on reviewing papers is 3 per month.

I am also regularly asked to review research proposals (NSF, PPARC, DFG, SA, ERC, NRC, VR, Hong Kong, Portugal, Austria) and to examine PhD theses (Finland, Sweden, Denmark, England, Germany, France, India, South Africa, USA). I have been an external panel member for the selection of post-docs (Finnish Academy; suomen akatemia, SA), major research grants (Deutsche Forschungsgesellschaft, DFG), and observing time (European Southern Observatories, ESO).

## Administrative experience

2021–present	Deputy director of Nordita
2010–present	Editorial Board Member of Astron. Nachr.
2010–2015	Deputy director of Nordita
2008–2015	Chairman of the Swedish Astrobiology Network
2007–2009	Member of the AlbaNova/Nordita colloquium committee
2001	Director of the Helmholtz Summer School, Potsdam
2000–2002	Director of the Nordita Master Class

## Other merits

Together with Wolfgang Dobler, I initiated the PENCIL CODE in 2001 as a public domain program for solving partial differential equations on massively parallel supercomputers. During 2008–2015 it was hosted through the subversion repository on Google Code (<http://pencil-code.googlecode.com>), and since 2015 it is hosted through <https://github.com/pencil-code>. It has been used for currently over 600 scientific publications; see Ref.D.5 in my full list of publications.

## Public Outreach Experience

2019	Efter big bang: produktionen av gravitationsvågor (Guest lecture at on Oct. 31, ABF-huset, Sveavägen 41, Stockholm)
2014	Article in Fysikaktuellt: Sökandet efter en ny teori för solfläckar
2010	Interview “Cycles of the Sun” (British Publishers) ( <a href="http://www.nordita.org/~brandenb/Solar_Activity_10.pdf">http://www.nordita.org/~brandenb/Solar_Activity_10.pdf</a> )
2008	Podcast <i>Is All Life Left-Handed?</i> ( <a href="http://www.astrobio.net/amee/summer_2008/Radio/radio.php">http://www.astrobio.net/amee/summer_2008/Radio/radio.php</a> )
2005	Organizer of Meeting on Nordic Science Outreach (Copenhagen)

- 2005 Co-authored outreach articles with Anja Andersen (Kvant and BioZoom)
- 1990 Extended interview in Finnish Television (Prisma program, YLE)

## Language skills

Native: German  
 Fluent: English and Finnish  
 Basic knowledge: Swedish

## Hobbies

Cycling, hiking, swimming. Participated in the 3 km Vansbrosimningen (<https://en.wikipedia.org/wiki/Vansbrosimningen>) and the 5 km Göta Kanalsimmet (<https://www.gotakanalsimmet.se/>).

## Publications

### A. Publications in refereed journals

(Highly quoted papers are denoted by an asterisk)

*Submitted:*

- 468. Brandenburg, A., & Scannapieco, E.: 2025, “Magnetically-assisted vorticity production in decaying acoustic turbulence,” *Astrophys. J.*, submitted (arXiv:2501.18525)
- 467. Rogachevskii, I., Kleeorin, N., & Brandenburg, A.: 2025, “Theory of the kinetic helicity effect on turbulent diffusion of magnetic and scalar fields,” *Astrophys. J.*, submitted (arXiv:2501.13807)
- 466. Brandenburg, A., Yi, L., & Wu, X.: 2025, “Inverse cascade from helical and nonhelical decaying columnar magnetic fields,” *J. Plasma Phys.*, submitted (arXiv:2501.12200)
- 465. Brandenburg, A., Käpylä, P. J., Rogachevskii, I., & Yokoi, N.: 2025, “Helicity effect on turbulent passive and active scalar diffusivities,” *Astrophys. J.*, submitted (arXiv:2501.08879)
- 464. Brandenburg, A., & Vishniac, E. T.: 2025, “Magnetic helicity fluxes in dynamos from rotating inhomogeneous turbulence,” *Astrophys. J.*, submitted (arXiv:2412.17402)
- 463. Sharma, R., Brandenburg, A., Subramanian, K., & Vikman, A.: 2025, “Lattice simulations of axion-U(1) inflation: gravitational waves, magnetic fields, and black holes,” *J. Cosmol. Astropart. Phys.*, submitted (arXiv:2411.04854)
- 462. Neronov, A., Vazza, F., Brandenburg, A., Caprini, C.: 2025, “Magnetic fields in a gamma-ray beam as a model of Porphyron,” *Astron. Astrophys.*, submitted (arXiv:2411.01640)

*In press:*

- 461. Vachaspati, T., & Brandenburg, A.: 2025, “Spectra of magnetic fields from electroweak symmetry breaking,” *Phys. Rev. D*, in press (arXiv:2412.00641)

*Published:*

- 460. Dehman, C., & Brandenburg, A.: 2025, “Reality of inverse cascading in neutron star crusts,” *Astron. Astrophys.* **694**, A39

459. Brandenburg, A., & Banerjee, A.: 2025, “Turbulent magnetic decay controlled by two conserved quantities,” *J. Plasma Phys.* **91**, E5
458. Brandenburg, A., Iarygina, O., Sfakianakis, E. I., & Sharma, R.: 2024, “Magnetogenesis from axion-SU(2) inflation,” *J. Cosmol. Astropart. Phys.* **12**, 057
457. Mtchedlidze, S., Domínguez-Fernández, P., Du, X., Carretti, E., Vazza, F., O’Sullivan, S. P., Brandenburg, A., & Kahniashvili, T.: 2024, “Intergalactic medium rotation measure of primordial magnetic fields,” *Astrophys. J.* **977**, 128
456. Schober, J., Rogachevskii, I., & Brandenburg, A.: 2024, “Efficiency of dynamos from the autonomous generation of a chiral asymmetry,” *Phys. Rev. D* **110**, 043515
455. Brandenburg, A., Neronov, A., & Vazza, F.: 2024, “Resistively controlled primordial magnetic turbulence decay,” *Astron. Astrophys.* **687**, A186
454. Iarygina, O., Sfakianakis, E. I., Sharma, R. & Brandenburg, A.: 2024, “Backreaction of axion-SU(2) dynamics during inflation,” *J. Cosmol. Astropart. Phys.* **04**, 018
453. Brandenburg, A., Clarke, E., Kahniashvili, T., Long, A. J., & Sun, G.: 2024, “Relic gravitational waves from the chiral plasma instability in the standard cosmological model,” *Phys. Rev. D* **109**, 043534
452. Schober, J., Rogachevskii, I., & Brandenburg, A.: 2024, “Chiral anomaly and dynamos from inhomogeneous chemical potential fluctuations,” *Phys. Rev. Lett.* **132**, 065101
451. Sharma, R., Dahl, J., Brandenburg, A., & Hindmarsh, M.: 2023, “Shallow relic gravitational wave spectrum with acoustic peak,” *J. Cosmol. Astropart. Phys.* **12**, 042
450. Brandenburg, A., Sharma, R., & Vachaspati, T.: 2023, “Inverse cascading for initial MHD turbulence spectra between Saffman and Batchelor,” *J. Plasma Phys.* **89**, 905890606
449. Carenza, P., Sharma, R., Marsh, M. C. D., Brandenburg, A., Müller, E.: 2023, “Magnetohydrodynamics predicts heavy-tailed distributions of axion-photon conversion,” *Phys. Rev. D* **108**, 103029
448. Brandenburg, A., Kamada, K., Mukaida, K., Schmitz, K., & Schober, J.: 2023, “Chiral magnetohydrodynamics with zero total chirality,” *Phys. Rev. D* **108**, 063529
447. Brandenburg, A., Elstner, D., Masada, Y., & Pipin, V.: 2023, “Turbulent processes and mean-field dynamo,” *Spa. Sci. Rev.* **219**, 55
446. Brandenburg, A., & Protiti, N. N.: 2023, “Electromagnetic conversion into kinetic and thermal energies,” *Entropy* **25**, 1270
445. Mizerski, K. A., Yokoi, N., & Brandenburg, A.: 2023, “Cross-helicity effect on  $\alpha$ -type dynamo in non-equilibrium turbulence,” *J. Plasma Phys.* **89**, 905890412
444. Sarin, N., Brandenburg, A., & Haskell, B.: 2023, “Confronting the neutron star population with inverse cascades,” *Astrophys. J. Lett.* **952**, L21
443. Brandenburg, A., & Ntormousi, E.: 2023, “Galactic Dynamos,” *Annu. Rev. Astron. Astrophys.* **61**, 561–606
442. He, Y., Roper Pol, A., & Brandenburg, A.: 2023, “Modified propagation of gravitational waves from the early radiation era,” *J. Cosmol. Astropart. Phys.* **06**, 025
441. Brandenburg, A., & Larsson, G.: 2023, “Turbulence with magnetic helicity that is absent on average,” *Atmosphere* **14**, 932
440. Brandenburg, A., Kamada, K., & Schober, J.: 2023, “Decay law of magnetic turbulence with helicity balanced by chiral fermions,” *Phys. Rev. Res.* **5**, L022028

439. Brandenburg, A.: 2023, “Hosking integral in nonhelical Hall cascade,” *J. Plasma Phys.* **89**, 175890101
438. Mtchedlidze, S., Domínguez-Fernández, P., Du, X., Schmidt, W., Brandenburg, A., Niemeyer, J., & Kahniashvili, T.: 2023, “Inflationary and phase-transitional primordial magnetic fields in galaxy clusters,” *Astrophys. J.* **944**, 100
437. Brandenburg, A.: 2023, “Quadratic growth during the COVID-19 pandemic: merging hotspots and reinfections,” *J. Phys. A: Math. Theor.* **56**, 044002
436. Brandenburg, A., Rogachevskii, I., & Schober, J.: 2023, “Dissipative magnetic structures and scales in small-scale dynamos,” *Mon. Not. Roy. Astron. Soc.* **518**, 6367–6375
435. Brandenburg, A., Zhou, H., & Sharma, R.: 2023, “Batchelor, Saffman, and Kazantsev spectra in galactic small-scale dynamos,” *Mon. Not. Roy. Astron. Soc.* **518**, 3312–3325
434. Sharma, R., & Brandenburg, A.: 2022, “Low frequency tail of gravitational wave spectra from hydromagnetic turbulence,” *Phys. Rev. D* **106**, 103536
433. Zhou, H., Sharma, R., & Brandenburg, A.: 2022, “Scaling of the Hosking integral in decaying magnetically-dominated turbulence,” *J. Plasma Phys.* **88**, 905880602
432. Sinha, S., Gupta, O., Singh, V., Lekshmi, B., Nandy, D., Mitra, D., Chatterjee, S., Bhattacharya, S., Chatterjee, S., Srivastava, N., Brandenburg, A., & Pal, S.: 2022, “A comparative analysis of machine-learning models for solar flare forecasting: Identifying high-performing active region flare indicators,” *Astrophys. J.* **935**, 45
431. Li, X.-Y., Mehlig, B., Svensson, G., Brandenburg, A., & Haugen, N. E. L.: 2022, “Collision fluctuations of lucky droplets with superdroplets,” *J. Atmos. Sci.* **79**, 1821–1835
430. Käpylä, M. J., Rheinhardt, M., & Brandenburg, A.: 2022, “Compressible test-field method and its application to shear dynamos,” *Astrophys. J.* **932**, 8
429. Kahniashvili, T., Clarke, E., Stepp, J., & Brandenburg, A.: 2022, “Big bang nucleosynthesis limits and relic gravitational wave detection prospects,” *Phys. Rev. Lett.* **128**, 221301
428. Brandenburg, A., & Ntormousi, E.: 2022, “Dynamo effect in unstirred self-gravitating turbulence,” *Mon. Not. Roy. Astron. Soc.* **513**, 2136–2151
427. Mtchedlidze, S., Domínguez-Fernández, P., Du, X., Brandenburg, A., Kahniashvili, T., O’Sullivan, S., Schmidt, W., & Brüggén, M.: 2022, “Evolution of primordial magnetic fields during large-scale structure formation,” *Astrophys. J.* **929**, 127
426. Roper Pol, A., Mandal, A., Brandenburg, A., & Kahniashvili, T.: 2022, “Polarization of gravitational waves from helical MHD turbulent sources,” *J. Cosmol. Astropart. Phys.* **04**, 019
425. Schober, J., Rogachevskii, I., & Brandenburg, A.: 2022, “Production of a chiral magnetic anomaly with emerging turbulence and mean-field dynamo action,” *Phys. Rev. Lett.* **128**, 065002
424. Schober, J., Rogachevskii, I., & Brandenburg, A.: 2022, “Dynamo instabilities in plasmas with inhomogeneous chiral chemical potential,” *Phys. Rev. D* **105**, 043507
423. Haugen, N. E. L., Brandenburg, A., Sandin, C., & Mattsson, L.: 2022, “Spectral characterisation of inertial particle clustering in turbulence,” *J. Fluid Mech.* **934**, A37
422. Brandenburg, A., He, Y., & Sharma, R.: 2021, “Simulations of helical inflationary magnetogenesis and gravitational waves,” *Astrophys. J.* **922**, 192
421. Brandenburg, A., & Sharma, R.: 2021, “Simulating relic gravitational waves from inflationary magnetogenesis,” *Astrophys. J.* **920**, 26



420. Brandenburg, A., & Das, U.: 2021, “Turbulent radiative diffusion and turbulent Newtonian cooling,” *Phys. Fluids* **33**, 095125
419. Brandenburg, A., Clarke, E., He, Y., & Kahniashvili, T.: 2021, “Can we observe the QCD phase transition-generated gravitational waves through pulsar timing arrays?” *Phys. Rev. D* **104**, 043513
418. He, Y., Brandenburg, A., & Sinha, A.: 2021, “Spectrum of turbulence-sourced gravitational waves as a constraint on graviton mass,” *J. Cosmol. Astropart. Phys.* **07**, 015
417. Brandenburg, A., Gogoberidze, G., Kahniashvili, T., Mandal, S., & Roper Pol, A., & Shenoy, N.: 2021, “The scalar, vector, and tensor modes in gravitational wave turbulence simulations,” *Class. Quantum Grav.* **38**, 145002
416. Brandenburg, A., He, Y., Kahniashvili, T., Rheinhardt, M., & Schober, J.: 2021, “Gravitational waves from the chiral magnetic effect,” *Astrophys. J.* **911**, 110
415. Blanco, N., Stafford, K., Lavoie, M.-C., Brandenburg, A., Górna, M. W., & Merski, M.: 2021, “A simple model for the total number of SARS-CoV-2 infections on a national level,” *Epidemiology and Infection* **149**, e80
414. Jakab, P., & Brandenburg, A.: 2021, “The effect of a dynamo-generated field on the Parker wind,” *Astron. Astrophys.* **647**, A18
413. Kahniashvili, T., Brandenburg, A., Gogoberidze, G., Mandal, S., & Roper Pol, A.: 2021, “Circular polarization of gravitational waves from early-universe helical turbulence,” *Phys. Rev. Res.* **3**, 013193
412. Pencil Code Collaboration: Brandenburg, A., Johansen, A., Bourdin, P. A., Dobler, W., Lyra, W., Rheinhardt, M., Bingert, S., Haugen, N. E. L., Mee, A., Gent, F., Babkovskaia, N., Yang, C.-C., Heinemann, T., Dintrans, B., Mitra, D., Candelaresi, S., Warnecke, J., Käpylä, P. J., Schreiber, A., Chatterjee, P., Käpylä, M. J., Li, X.-Y., Krüger, J., Aarnes, J. R., Sarson, G. R., Oishi, J. S., Schober, J., Plasson, R., Sandin, C., Karchniwy, E., Rodrigues, L. F. S., Hubbard, A., Guerrero, G., Snodin, A., Losada, I. R., Pekkila, J., & Qian, C.: 2021, “The Pencil Code, a modular MPI code for partial differential equations and particles: multipurpose and multiuser-maintained,” *J. Open Source Softw.* **6**, 2807
411. Käpylä, M. J., Álvarez Vizoso, J., Rheinhardt, M., Brandenburg, A., & Singh, N. K.: 2020, “On the existence of shear–current effects in magnetized turbulence,” *Astrophys. J.* **905**, 179
410. Roper Pol, A., Mandal, S., Brandenburg, A., Kahniashvili, T., & Kosowsky, A.: 2020, “Numerical Simulations of Gravitational Waves from Early-Universe Turbulence,” *Phys. Rev. D* **102**, 083512
409. Brandenburg, A.: 2020, “Piecewise quadratic growth during the 2019 novel coronavirus epidemic,” *Infectious Disease Modelling* **5**, 681–690
408. Brandenburg, A.: 2020, “Hall cascade with fractional magnetic helicity in neutron star crusts,” *Astrophys. J.* **901**, 18
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