# Steven M Tobias

List of Publications by Year
in descending order



| 137 | 4,061 | 101496 | 133188 |
|---|---|---|---|
| papers | citations | 36 h-index | 59 g-index |

| 142 | 142 | 142 | 1676 |
|---|---|---|---|
| all docs | docs citations | times ranked | citing authors |

| # | Article | IF | Citations |
|---|---|---|---|
| 1 | An Active Sun Throughout the Maunder Minimum. Solar Physics, 1998, 181, 237-249. | 1.0 | 351 |
| 2 | Transport and Storage of Magnetic Field by Overshooting Turbulent Compressible Convection. Astrophysical Journal, 2001, 549, 1183-1203. | 1.6 | 214 |
| 3 | Chaotically modulated stellar dynamos. Monthly Notices of the Royal Astronomical Society, 1995, 273, 1150-1166. | 1.6 | 124 |
| 4 | Modulation and symmetry changes in stellar dynamos. Monthly Notices of the Royal Astronomical Society, 1998, 297, 1123-1138. | 1.6 | 112 |
| 5 | Pumping of Magnetic Fields by Turbulent Penetrative Convection. Astrophysical Journal, 1998, 502, L177-L180. | 1.6 | 106 |
| 6 | Convective and absolute instabilities of fluid flows in finite geometry. Physica D: Nonlinear Phenomena, 1998, 113, 43-72. | 1.3 | 99 |
| 7 | For how long will the current grand maximum of solar activity persist?. Geophysical Research Letters, 2008, 35, . | 1.5 | 99 |
| 8 | Downward pumping of magnetic flux as the cause of filamentary structures in sunspot penumbrae. Nature, 2002, 420, 390-393. | 13.7 | 97 |
| 9 | The Origin of Penumbral Structure in Sunspots: Downward Pumping of Magnetic Flux. Astrophysical Journal, 2004, 600, 1073-1090. | 1.6 | 86 |
| 10 | On Predicting the Solar Cycle Using Mean-Field Models. Astrophysical Journal, 2007, 661, 1289-1296. | 1.6 | 86 |
| 11 | Direct Statistical Simulation of Out-of-Equilibrium Jets. Physical Review Letters, 2013, 110, 104502. | 2.9 | 86 |
| 12 | A multiscale dynamo model driven by quasi-geostrophic convection. Journal of Fluid Mechanics, 2015, 780, 143-166. | 1.4 | 83 |
| 13 | Î²-Plane Magnetohydrodynamic Turbulence in the Solar Tachocline. Astrophysical Journal, 2007, 667, L113-L116. | 1.6 | 79 |
| 14 | ASTROPHYSICAL FLUID DYNAMICS VIA DIRECT STATISTICAL SIMULATION. Astrophysical Journal, 2011, 727, 127. | 1.6 | 74 |
| 15 | Sensitivity of stratified turbulence to the buoyancy Reynolds number. Journal of Fluid Mechanics, 2013, 725, 1-22. | 1.4 | 67 |
| 16 | Dynamo properties of the turbulent velocity field of a saturated dynamo. Journal of Fluid Mechanics, 2009, 621, 205-214. | 1.4 | 65 |
| 17 | Shear-driven dynamo waves at high magnetic Reynolds number. Nature, 2013, 497, 463-465. | 13.7 | 64 |
| 18 | Linear and nonlinear dynamo properties of time-dependent ABC flows. Fluid Dynamics Research, 2001, 28, 237-265. | 0.6 | 63 |

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| 19 | Generalized Quasilinear Approximation: Application to Zonal Jets. Physical Review Letters, 2016, 116, 214501. | 2.9 | 61 |
| 20 | The Solar Dynamo. Space Science Reviews, 2010, 152, 591-616. | 3.7 | 59 |
| 21 | Supermodulation of the Sun's magnetic activity: the effects of symmetry changes. Monthly Notices of the Royal Astronomical Society, 2016, 456, 2654-2661. | 1.6 | 59 |
| 22 | The Competition in the Solar Dynamo between Surface and Deep-seated Î±-Effects. Astrophysical Journal, 2002, 580, L89-L92. | 1.6 | 58 |
| 23 | Large-Eddy Simulations of Magnetohydrodynamic Turbulence in Heliophysics and Astrophysics. Space Science Reviews, 2015, 194, 97-137. | 3.7 | 56 |
| 24 | The solar dynamo. Philosophical Transactions Series A, Mathematical, Physical, and Engineering Sciences, 2002, 360, 2741-2756. | 1.6 | 55 |
| 25 | The transition to Earth-like torsional oscillations in magnetoconvection simulations. Earth and Planetary Science Letters, 2015, 419, 22-31. | 1.8 | 55 |
| 26 | Diffusivity Quenching as a Mechanism for Parker's Surface Dynamo. Astrophysical Journal, 1996, 467, 870. | 1.6 | 52 |
| 27 | Physical Causes of Solar Activity. Space Science Reviews, 2000, 94, 99-112. | 3.7 | 51 |
| 28 | Î±Effect in a Family of Chaotic Flows. Physical Review Letters, 2006, 96, 034503. | 2.9 | 51 |
| 29 | The turbulent dynamo. Journal of Fluid Mechanics, 2021, 912, . | 1.4 | 51 |
| 30 | Breakup of Spiral Waves into Chemical Turbulence. Physical Review Letters, 1998, 80, 4811-4814. | 2.9 | 49 |
| 31 | Asymptotic properties of a nonlinÃ©ar Î±Ï‰-dynamo wave: Period, amplitude and latitude dependence. Geophysical and Astrophysical Fluid Dynamics, 1997, 86, 249-285. | 0.4 | 41 |
| 32 | The solar dynamo and the tachocline. , 2007, , 319-350. | | 40 |
| 33 | Dynamo action in complex flows: the quick and the fast. Journal of Fluid Mechanics, 2008, 601, 101-122. | 1.4 | 40 |
| 34 | ENERGY DISSIPATION IN MAGNETOHYDRODYNAMIC TURBULENCE: COHERENT STRUCTURES OR â€œNANOFLARESâ€?. Astrophysical Journal, 2014, 795, 127. | 1.6 | 40 |
| 35 | Convection-driven kinematic dynamos at low Rossby and magnetic Prandtl numbers. Physical Review Fluids, 2016, 1, . | 1.0 | 40 |
| 36 | On the instability of magnetohydrodynamic shear flows. Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences, 2001, 457, 1365-1384. | 1.0 | 38 |

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| 37 | Convective Dynamos with Penetration, Rotation, and Shear. Astrophysical Journal, 2008, 685, 596-605. | 1.6 | 36 |
| 38 | Convective dynamo action in a spherical shell: symmetries and modulation. Journal of Fluid Mechanics, 2016, 799, . | 1.4 | 36 |
| 39 | On long-term modulation of the Sun's magnetic cycle. Monthly Notices of the Royal Astronomical Society, 2018, 473, 1596-1602. | 1.6 | 34 |
| 40 | Flux expulsion with dynamics. Journal of Fluid Mechanics, 2016, 791, 568-588. | 1.4 | 33 |
| 41 | The Influence of Velocity Shear on Magnetic Buoyancy Instability in the Solar Tachocline. Astrophysical Journal, 2004, 603, 785-802. | 1.6 | 32 |
| 42 | Unpredictable Sun leaves researchers in the dark. Nature, 2006, 442, 26-26. | 13.7 | 32 |
| 43 | Rotating magnetic shallow water waves and instabilities in a sphere. Geophysical and Astrophysical Fluid Dynamics, 2017, 111, 282-322. | 0.4 | 31 |
| 44 | Topological Gaseous Plasmon Polariton in Realistic Plasma. Physical Review Letters, 2020, 124, 195001. | 2.9 | 31 |
| 45 | Scaling behaviour in spherical shell rotating convection with fixed-flux thermal boundary conditions. Journal of Fluid Mechanics, 2020, 889, . | 1.4 | 31 |
| 46 | ON LARGE-SCALE DYNAMO ACTION AT HIGH MAGNETIC REYNOLDS NUMBER. Astrophysical Journal, 2014, 789, 70. | 1.6 | 30 |
| 47 | The dynamics and excitation of torsional waves in geodynamo simulations. Geophysical Journal International, 2014, 196, 724-735. | 1.0 | 30 |
| 48 | Low-order stellar dynamo models. Monthly Notices of the Royal Astronomical Society, 2005, 363, 1167-1172. | 1.6 | 28 |
| 49 | Three-dimensional rotating Couette flow via the generalised quasilinear approximation. Journal of Fluid Mechanics, 2017, 810, 412-428. | 1.4 | 28 |
| 50 | Modulation of solar and stellar dynamos. Astronomische Nachrichten, 2002, 323, 417-423. | 0.6 | 27 |
| 51 | Heat transfer and flow regimes in quasi-static magnetoconvection with a vertical magnetic field. Journal of Fluid Mechanics, 2019, 877, 1186-1206. | 1.4 | 27 |
| 52 | A simple system for moist convection: theÂRainyâ€“BÃ©nard model. Journal of Fluid Mechanics, 2019, 862, 162-199. | 1.4 | 26 |
| 53 | Global Magnetorotational Instability with Inflow. I. Linear Theory and the Role of Boundary Conditions. Astrophysical Journal, 2004, 602, 892-903. | 1.6 | 26 |
| 54 | Flux Pumping and Magnetic Fields in the Outer Penumbra of a Sunspot. Astrophysical Journal, 2008, 686, 1454-1465. | 1.6 | 26 |

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| 55 | Limited Role of Spectra in Dynamo Theory: Coherent versus Random Dynamos. Physical Review Letters, 2008, 101, 125003. | 2.9 | 25 |
| 56 | ON THE GENERATION OF ORGANIZED MAGNETIC FIELDS. Astrophysical Journal, 2011, 728, 153. | 1.6 | 25 |
| 57 | The Nonlinear Evolution of Instabilities Driven by Magnetic Buoyancy: A New Mechanism for the Formation of Coherent Magnetic Structures. Astrophysical Journal, 2007, 663, L113-L116. | 1.6 | 23 |
| 58 | Linear and nonlinear dynamo action. Physics Letters, Section A: General, Atomic and Solid State Physics, 1998, 249, 437-442. | 0.9 | 21 |
| 59 | Interaction between dynamos at different scales. Physics of Fluids, 2005, 17, 127105. | 1.6 | 18 |
| 60 | Comparison of the anelastic approximation with fully compressible equations for linear magnetoconvection and magnetic buoyancy. Geophysical and Astrophysical Fluid Dynamics, 2010, 104, 545-563. | 0.4 | 18 |
| 61 | What is a large-scale dynamo?. Monthly Notices of the Royal Astronomical Society: Letters, 2017, 464, L119-L123. | 1.2 | 18 |
| 62 | Nonlinear magnetoconvection in the presence of strong oblique fields. Journal of Fluid Mechanics, 2000, 410, 285-322. | 1.4 | 17 |
| 63 | The Solar Dynamo: The Role of Penetration, Rotation and Shear on Convective Dynamos. Space Science Reviews, 2009, 144, 77-86. | 3.7 | 17 |
| 64 | Noise-sustained structures due to convective instability in finite domains. Physica D: Nonlinear Phenomena, 2000, 145, 191-206. | 1.3 | 16 |
| 65 | Vortex dynamos. Journal of Fluid Mechanics, 2004, 498, 1-21. | 1.4 | 16 |
| 66 | Convection-driven kinematic dynamos at low Rossby and magnetic Prandtl numbers: Single mode solutions. Physical Review E, 2016, 93, 023115. | 0.8 | 16 |
| 67 | The role of helicity and stretching in forced kinematic dynamos in a spherical shell. Physics of Fluids, 2007, 19, 057101. | 1.6 | 15 |
| 68 | Transient spatio-temporal chaos in the complex Ginzburgâ€“Landau equation on long domains. Physics Letters, Section A: General, Atomic and Solid State Physics, 2010, 374, 2030-2034. | 0.9 | 15 |
| 69 | Two-dimensional magnetohydrodynamic turbulence in the small magnetic Prandtl number limit. Journal of Fluid Mechanics, 2012, 703, 85-98. | 1.4 | 14 |
| 70 | SHEAR-DRIVEN DYNAMO WAVES IN THE FULLY NONLINEAR REGIME. Astrophysical Journal, 2016, 825, 23. | 1.6 | 14 |
| 71 | Angular momentum transport by the GSF instability: non-linear simulations at the equator. Monthly Notices of the Royal Astronomical Society, 2019, 487, 1777-1794. | 1.6 | 14 |
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| 74 | The effects of flux transport on interface dynamos. Monthly Notices of the Royal Astronomical Society, 2008, 391, 467-480. | 1.6 | 11 |
| 75 | Dynamo efficiency in compressible convective dynamos with and without penetration. Geophysical and Astrophysical Fluid Dynamics, 2010, 104, 565-576. | 0.4 | 11 |
| 76 | On the measurement of the turbulent diffusivity of a large-scale magnetic field. Journal of Fluid Mechanics, 2013, 717, 347-360. | 1.4 | 11 |
| 77 | Inertia-less convectively-driven dynamo models in the limit of low Rossby number and large Prandtl number. Physics of the Earth and Planetary Interiors, 2017, 266, 54-59. | 0.7 | 11 |
| 78 | The effect of Schmidt number on gravity current flows: The formation of large-scale three-dimensional structures. Physics of Fluids, 2021, 33, . | 1.6 | 11 |
| 79 | Mean flow generation in rotating anelastic two-dimensional convection. Physics of Fluids, 2016, 28, . | 1.6 | 10 |
| 80 | Generalised quasilinear approximation of the helical magnetorotational instability. Journal of Plasma Physics, 2016, 82, . | 0.7 | 10 |
| 81 | Dimensional reduction of direct statistical simulation. Journal of Fluid Mechanics, 2020, 898, . | 1.4 | 10 |
| 82 | Scaling behaviour of small-scale dynamos driven by Rayleighâ€“BÃ©nard convection. Journal of Fluid Mechanics, 2021, 915, . | 1.4 | 10 |
| 83 | Hydrodynamic instabilities in the solar tachocline. Astronomy and Astrophysics, 2008, 488, 819-827. | 2.1 | 10 |
| 84 | The puzzling structure of a sunspot. Astronomy and Geophysics, 2004, 45, 4.28-4.33. | 0.1 | 9 |
| 85 | Mean induction and diffusion: the influence of spatial coherence. Journal of Fluid Mechanics, 2009, 627, 403-421. | 1.4 | 9 |
| 86 | The effect of stratification and compressibility on anelastic convection in a rotating plane layer. Geophysical and Astrophysical Fluid Dynamics, 2011, 105, 566-585. | 0.4 | 9 |
| 87 | Direct Statistical Simulation of a Jet. , 2019, , 332-346. | | 9 |
| 88 | Torsional waves driven by convection and jets in Earthâ€™s liquid core. Geophysical Journal International, 2019, 216, 123-129. | 1.0 | 9 |
| 89 | Angular momentum transport, layering, and zonal jet formation by the GSF instability: non-linear simulations at a general latitude. Monthly Notices of the Royal Astronomical Society, 2020, 495, 1468-1490. | 1.6 | 9 |
| 90 | Potential vorticity transport in weakly and strongly magnetized plasmas. Physics of Plasmas, 2021, 28, 042301. | 0.7 | 9 |

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| 92 | Magnetic flux pumping and the structure of a sunspot penumbra. Astronomische Nachrichten, 2002, 323, 383-386. | 0.6 | 8 |
| 93 | Large-scale convective dynamos in a stratified rotating plane layer. Geophysical and Astrophysical Fluid Dynamics, 2013, 107, 218-243. | 0.4 | 8 |
| 94 | Nonlinear generation of large-scale magnetic fields in forced spherical shell dynamos. Physics of Fluids, 2010, 22, 037101. | 1.6 | 7 |
| 95 | Self-consistent single mode investigations of the quasi-geostrophic convection-driven dynamo model. Journal of Plasma Physics, 2018, 84, . | 0.7 | 7 |
| 96 | The electromotive force in multi-scale flows at high magnetic Reynolds number. Journal of Plasma Physics, 2015, 81, . | 0.7 | 6 |
| 97 | Convection-driven kinematic dynamos with a self-consistent shear flow. Geophysical and Astrophysical Fluid Dynamics, 2019, 113, 131-148. | 0.4 | 6 |
| 98 | Parallel-in-time integration of kinematic dynamos. Journal of Computational Physics: X, 2020, 7, 100057. | 1.1 | 6 |
| 99 | THE DECAY OF A WEAK LARGE-SCALE MAGNETIC FIELD IN TWO-DIMENSIONAL TURBULENCE. Astrophysical Journal, 2016, 823, 111. | 1.6 | 6 |
| 100 | Direct statistical simulation of jets and vortices in 2D flows. Physics of Fluids, 2017, 29, . | 1.6 | 5 |
| 101 | Dynamics of an idealized fluid model for investigating convective-scale data assimilation. Tellus, Series A: Dynamic Meteorology and Oceanography, 2017, 69, 1369332. | 0.8 | 5 |
| 102 | Circulation conservation and vortex breakup in magnetohydrodynamics at low magnetic PrandtlÂnumber. Journal of Fluid Mechanics, 2018, 857, 38-60. | 1.4 | 5 |
| 103 | Observations of large-scale coherent structures in gravity currents: implications for flow dynamics. Experiments in Fluids, 2021, 62, 1. | 1.1 | 5 |
| 104 | Direct statistical simulation of low-order dynamosystems. Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences, 2021, 477, . | 1.0 | 5 |
| 105 | Characterising the shape, size, and orientation of cloudâ€feeding coherent boundaryâ€layer structures. Quarterly Journal of the Royal Meteorological Society, 2022, 148, 499-519. | 1.0 | 5 |
| 106 | Global Magnetorotational Instability with Inflow. II. The Nonlinear Development of Axisymmetric Wall Modes. Astrophysical Journal, 2006, 638, 382-390. | 1.6 | 4 |
| 107 | Bistability in the complex Ginzburgâ€“Landau equation with drift. Physica D: Nonlinear Phenomena, 2009, 238, 184-196. | 1.3 | 4 |
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| 109 | Dynamics of spatially localized states in transitional plane Couette flow. Journal of Fluid Mechanics, 2019, 867, 414-437. | 1.4 | 4 |
| 110 | Scale Selection in the Stratified Convection of the Solar Photosphere. Astrophysical Journal, 2019, 874, 103. | 1.6 | 4 |
| 111 | Joint instability and abrupt nonlinear transitions in a differentially rotating plasma. Journal of Plasma Physics, 2019, 85, . | 0.7 | 4 |
| 112 | Performance of parallel-in-time integration for Rayleigh BÃ©nard convection. Computing and Visualization in Science, 2020, 23, 1. | 1.2 | 4 |
| 113 | On magnetic helicity generation and transport in a nonlinear dynamo driven by a helical flow. Journal of Plasma Physics, 2020, 86, . | 0.7 | 4 |
| 114 | Solitary magnetostrophic Rossby waves in spherical shells. Journal of Fluid Mechanics, 2020, 904, . | 1.4 | 4 |
| 115 | Resonance in a coupled solar-climate model. Space Science Reviews, 2000, 94, 153-160. | 3.7 | 3 |
| 116 | Data assimilation approach to analysing systems of ordinary differential equations. , 2018, , . | | 3 |
| 117 | A probabilistic protocol for the assessment of transition and control. Journal of Fluid Mechanics, 2020, 895, . | 1.4 | 3 |
| 118 | The Solar Dynamo. Space Sciences Series of ISSI, 2009, , 591-616. | 0.0 | 3 |
| 119 | Thermal boundary layer structure in convection with and without rotation. Physical Review Fluids, 2020, 5, . | 1.0 | 3 |
| 120 | Efficiency gains of a multi-scale integration method applied to a scale-separated model for rapidly rotating dynamos. Computer Physics Communications, 2022, 273, 108253. | 3.0 | 3 |
| 121 | Direct statistical simulation of the Lorenz63 system. Chaos, 2022, 32, 043111. | 1.0 | 3 |
| 122 | Skew-varicose instability in two-dimensional generalized Swift-Hohenberg equations. Physical Review E, 2011, 84, 036201. | 0.8 | 2 |
| 123 | Nonperturbative mean-field theory for minimum enstrophy relaxation. Physical Review E, 2015, 91, 053024. | 0.8 | 2 |
| 124 | Generation of shear flows and vortices in rotating anelastic convection. Physical Review Fluids, 2020, 5, . | 1.0 | 2 |
| 125 | Ion heat and parallel momentum transport by stochastic magnetic fields and turbulence. Plasma Physics and Controlled Fusion, 2022, 64, 015006. | 0.9 | 2 |
| 126 | Nonlinear magnetoconvection in the presence of a strong oblique field. , 2003, , 345-356. | | 1 |

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| 127 | On the measurement of turbulent magnetic diffusivities: the three-dimensional case. Journal of Fluid Mechanics, 2013, 735, 457-472. | 1.4 | 1 |
| 128 | Modulation and Symmetry-Breaking in Low-Order Models of the Solar Dynamo. , 2001, , 381-390. | | 1 |
| 129 | The Solar Dynamo: The Role of Penetration, Rotation and Shear on Convective Dynamos. Space Sciences Series of ISSI, 2008, , 77-86. | 0.0 | 1 |
| 130 | An Idealized 1Â½-Layer Isentropic Model with Convection and Precipitation for Satellite Data Assimilation Research. Part I: Model Dynamics. Journals of the Atmospheric Sciences, 2022, 79, 859-873. | 0.6 | 1 |
| 131 | An Idealized 1Â½-Layer Isentropic Model with Convection and Precipitation for Satellite Data Assimilation Research. Part II: Model Derivation. Journals of the Atmospheric Sciences, 2022, 79, 875-886. | 0.6 | 1 |
| 132 | Optimizing the control of transition to turbulence using a Bayesian method. Journal of Fluid Mechanics, 2022, 941, . | 1.4 | 1 |
| 133 | Magnetic Pumping at the Base of the Solar Convection Zone. Symposium - International Astronomical Union, 2001, 203, 156-158. | 0.1 | 0 |
| 134 | An Introduction to Mean Field Dynamo Theory. , 2009, , 15-48. | | 0 |
| 135 | The Effect of Small Scale Motion on an Essentially-Nonlinear Dynamo. Proceedings of the International Astronomical Union, 2010, 6, 367-368. | 0.0 | 0 |
| 136 | Nigel Weiss (1936â€“2020). Astronomy and Geophysics, 2020, 61, 5.11-5.11. | 0.1 | 0 |
| 137 | THE SOLAR DYNAMO. Series on Iraq War and Its Consequences, 2005, , 355-373. | 0.1 | 0 |