

Curriculum Vitae

George Mamatsashvili

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1. Academic Degree

PhD in Astrophysics, University of Edinburgh, UK, 2011

MSc. in Plasma Physics, Tbilisi State University, Georgia, 2005

BSc. in Physics, Tbilisi State University, Georgia, 2003

2. Work Experience

2012- present, Assistant-Professor, Department of Physics, Tbilisi State University, Georgia

2015 – 2017, Helmholtz-Zentrum, Dresden, Germany

2011 – 2012, Research Associate, Extragalactic Group, Turin Astrophysical Observatory, Italy

2007 – 2011, PhD student, School of Physics and Astronomy, University of Edinburgh, UK

3. Participation in Research Projects

- 2017-2020, Rustaveli National Science Foundation, Georgia, project #FR17-107: *Anisotropic nature of subcritical magnetohydrodynamic turbulence in smooth plasma shear flows*, Principal Investigator
- 2015-2017, Alexander von Humboldt Foundation, Germany, project: *Magnetorotational instability and turbulence in natural and laboratory magnetized flows – new approaches*, Principal investigator
- 06.2015, European Research Council, project: *Subcritical turbulence in three-dimensional unbounded plane shear flow – self-sustenance via interplay of linear transient growth and nonlinear transverse cascade*, Principal Investigator
- 2013-2014, Rustaveli National Science Foundation, Georgia, project #52/07: *Self-sustaining mechanism of turbulence in spectrally stable shear flows*, Principal Investigator
- 2011-2012, Italian National Institute of Astrophysics (INAF), Italy, project #CRA.1.06.11.80, *Numerical simulations of magnetized relativistic flows*, Co-Investigator

4. List of Selected Publications

- G. Mamatsashvili**, F. Stefani, A. Guseva, M. Avila, *Quasi-two-dimensional nonlinear evolution of helical magnetorotational instability in a magnetized Taylor-Couette flow*, New Journal of Physics, **20**, (2018): 013012
- D. Gogichaishvili, **G. Mamatsashvili**, W. Horton, G. Chagelishvili, G. Bodo, *Nonlinear transverse cascade and sustenance of MRI-turbulence in Keplerian disks with an azimuthal magnetic field*, the Astrophysical Journal, **845**, (2017): 70 pp.
- G. Mamatsashvili**, F. Stefani, *Nonmodal analysis of helical and azimuthal magnetorotational instabilities*, Magnetohydrodynamics, **53**, (2017): 107-117
- G. Bodo, **G. Mamatsashvili**, P. Rossi, A. Mignone, *Linear stability analysis of magnetized jets: the rotating case*, Monthly Notices of the Royal Astronomical Society, **462**, (2016): 3031-3052
- G. Mamatsashvili**, F. Stefani, *Linking dissipation-induced instabilities with nonmodal growth – the case of helical magnetorotational instability*, Physical Review E, **94**, (2016): 051203

6. **G. Mamatsashvili**, G. Khujadze, G. Chagelishvili, S. Dong, J. Jimenez, H. Foysi, *Dynamics of homogeneous shear turbulence – a key role of the nonlinear transverse cascade in the bypass concept*, Physical Review E, **94**, (2016): 023111
7. G. Gibbons, **G. Mamatsashvili**, W.K.M. Rice, *Planetesimal formation in self-gravitating disks – dust trapping by vortices*, Monthly Notices of the Royal Astronomical Society, **453**, (2015): 4232-4243
8. **G. Mamatsashvili**, D. Gogichaishvili, G. Chagelishvili, W. Horton, *Nonlinear transverse cascade and two-dimensional magnetohydrodynamic subcritical turbulence in plane shear flows*, Physical Review E, **89**, (2014): 043101
9. **G. Mamatsashvili**, G. Chagelishvili, G. Bodo, P. Rossi, *Revisiting linear dynamics of non-axisymmetric perturbations in weakly magnetized accretion discs*, Monthly Notices of the Royal Astronomical Society, **435**, (2013): 2552-2567
10. G. Bodo, **G. Mamatsashvili**, P. Rossi, A. Mignone, *Linear stability analysis of magnetized jets: the non-rotating case*, Monthly Notices of the Royal Astronomical Society, **434**, (2013): 3030-3046
11. **G. Mamatsashvili**, W.K.M. Rice, *Excitation of spiral density waves by convection in accretion disks*, Monthly Notices of the Royal Astronomical Society, **417**, (2011): 634-648

5. Presentations at Scientific Events (Meeting, Conference, Congress etc.) (over the last 5 years)

1. 2017, 11-14 July, Houston, Texas, USA, Sam Houston State University, Bifurcations and Instabilities in Fluid Dynamics, talk: “*Nonmodal and nonlinear dynamics of helical magnetorotational instability*”, **G. Mamatsashvili**, F. Stefani, <http://www.shsu.edu/academics/physics/bifd-2017/index.html>
2. 2017, 25 June -1 July, Valtice Castle, Czech Republic, Institute of Geophysics, Academy of Sciences of Czech Republic, 2nd Conference on Natural Dynamos, talk: “*Nonmodal and nonlinear dynamics of helical magnetorotational instability*”, **G. Mamatsashvili**, F. Stefani, <http://valtice.ig.cas.cz/index.html>
3. 2016, 30 Nov – 02 Dec, Göttingen, Germany, Max Planck Institute for Solar System Research, MHD days, *Nonmodal dynamics of helical magnetorotational instability*, **G. Mamatsashvili**, F. Stefani, <https://mhd2016.sciencesconf.org/>
4. 2016, 27 June – 1 July, Barcelona, Spain, Polytechnic University of Catalonia, GDR Dynamo meeting, talk: “*Nonmodal analysis of helical and azimuthal magnetorotational instability*”, **G. Mamatsashvili**, F. Stefani, <http://mhd.ens.fr/GDRE/>
5. 2016, 20-24 June, Cagliari, Italy, University of Cagliari, 10th PAMIR International Conference in Fundamental and Applied MHD, talk: “*Nonmodal analysis of helical and azimuthal magnetorotational instabilities*”, **G. Mamatsashvili**, F. Stefani, <http://www.diee.unica.it/pamir2016/>
6. 2016, 12-15 Jan., Berlin, Germany, Max Planck Society, Max Planck Princeton Center Workshop, talk: “*MHD turbulence in shear flows: self-sustenance via interplay of nonmodal growth and nonlinear transverse cascade*”, **G. Mamatsashvili**, <https://www.princeton.edu/plasmacenter/news-events/announcements/>
7. 2015, 25 May -26 June, Madrid, Spain, Madrid Polytechnic University, Multiflow Summer Workshop, talk: “*Subcritical turbulence in 3D unbounded plane shear flows: self-sustenance via interplay of linear transient growth and nonlinear transverse cascade*”, **G. Mamatsashvili**, G. Khujadze, G. Chagelishvili, <http://torroja.dmt.upm.es/summer15/index.html>
8. 2015, 2-7 Feb., Tbilisi, Georgia, Tbilisi State University, Conference in Exact and Natural Sciences, talk: “*Magnetorotational instability in differentially rotating plasma flows*”, **G. Mamatsashvili**, <http://conference.ens-2015.tsu.ge/>
9. 2014, 6-9 May, Cargese, Corsica, France, University Paris-Sud, Subcritical transition to turbulence, talk: “*Subcritical turbulence in 2D MHD plane shear flows – self-sustenance via interplay of linear transient growth and nonlinear transverse cascade*”, **G. Mamatsashvili**, <https://perso.limsi.fr/duguet/Cargese/cargese.html>
10. 2012, 17-20 Sept., Marseille, France, Astrophysical Laboratory of Marseille, Instabilities and Structures in Proto-planetary Disks, review talk: “*Interlaced dynamics of density waves and vortices in self-gravitating disks*”, **G. Mamatsashvili**, <https://wiki.lam.fr/ispp/IsppWorkShop>