

## George N. Throumoulopoulos

Place and date of birth: 28 March 1956, Fortosi, prefecture of Ioannina, Greece

PhD in Physics: Department of Physics, University of Ioannina (Uoi), 1989

Current status: Emeritus professor, Department of Physics, Section of Astro-geophysics, Uoi

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### Teaching and mentoring (1982-2023)

*Courses taught in the Departments of Physics and Mathematics of Uoi:*

General Physics, Classical Mechanics, Classical Electrodynamics, Statistical Physics, Resources of Energy, Plasma *Physics* (undergraduate and postgraduate), Differential Equations, Complex Functions, Mathematical Methods of Physics, Numerical Methods of Mathematical Physics (graduate)

Supervision of 3 post-doctoral projects, 3 PhD theses and 7 master theses.  
participation in several of these advisory committees

### Research interests:

Theoretical studies of equilibrium, stability, relaxation and dynamics of laboratory and astrophysical plasmas in the framework of a variety of models, such as magnetohydrodynamics, multi-fluid, hybrid fluid-kinetic, reduced kinetic and fully kinetic ones.

### Long term collaboration (1991- ):

Max-Planck Institute for Plasma Physics (IPP), Garching, Germany, conducted through a post-doctoral Marie-Curie fellowship (1992-94), several EURATOM mobility contracts and a EUROfusion-Enabling-Research project (ENR) (2019-2220)

### Scientific and administrative assignments

1. member (national delegate) of Fusion Physics Committee (1999-2002) and Scientific and Technical Advisory Committee (2002-2007) of EURATOM
2. coordinator of a EURATOM-Uoi research grand (1996-1999)
3. coordinator of the plasma physics group in the framework of participation of Uoi in the EURATOM-Hellenic Republic Association (currently NCSR-D) (1999- )
4. principal investigator (PI) of the ENR project MFE19.NCSR-D-01 with participants the UOI, the National Technical University of Athens, IPP and the Physics Department and Institute for Fusion Studies, University of Texas at Austin, USA (2019-2020)

### Selected publications

(from 89 in peer reviewed journals and 74 in conference proceedings)

1. G. N. Throumoulopoulos and D. Pfirsch, "*Negative-energy modes in magnetically confined plasma in the framework of Maxwell-drift kinetic theory*", Phys. Rev. **E49**, 3290 (1994).

2. H. Tasso and G. N. Throumoulopoulos, "Axisymmetric ideal magnetohydrodynamic equilibria with incompressible flows", Phys. Plasmas **5**, 2378 (1998).
3. G. N. Throumoulopoulos, H. Weitzner, H. Tasso, "On nonexistence of tokamak equilibria with purely poloidal flow", Phys. Plasmas **13**, 122501 (2006).
4. G. N. Throumoulopoulos, H. Tasso, "A sufficient condition for the linear stability of magnetohydrodynamic equilibria with field aligned incompressible flow", Phys. Plasmas **14**, 122104 (2007).
5. Ap Kuiroukidis and G. N. Throumoulopoulos, H. Tasso "Vlasov tokamak equilibria with sheared toroidal flow and anisotropic pressure", Phys. Plasmas **22**, 082505 (2015).
6. G. Poulipoulis, G. N. Throumoulopoulos, C. Konz, and ITM-TF Contributors, "Remapping HELENA to incompressible plasma rotation parallel to the magnetic field" Phys. Plasmas **23**, 072507 (2016).
7. D. D. Kaltsas, G. N. Throumoulopoulos, P. J. Morrison, "Helically symmetric extended magnetohydrodynamics: Hamiltonian formulation and equilibrium variational principles", J. Plasma Phys. **84**, 745840301 (2018).
8. A. Evangelias, G. N. Throumoulopoulos, "Symmetry transformations for MHD and Chew–Goldberger–Low equilibria revisited, Plasma Sci. Technology" **21**, 095102 (2019).
9. D. Kaltsas, G. N. Throumoulopoulos, "Neural network tokamak equilibria with incompressible flows" Phys. Plasmas **29**, 022506 (2022).
10. D. A. Kaltsas, A. Kuiroukidis, P. J. Morrison and G. N. Throumoulopoulos, Axisymmetric hybrid Vlasov equilibria with applications to tokamak plasmas, Plasma Phys. Control. Fusion **66**, 065016 (2024).

### Research grads

1. "Novel Hamiltonian and numerical approaches to flowing fusion plasmas in connection with advanced confinement regimes", EUROfusion Consortium/Enabling Research (ENR-MFE19.NCSR01) - National Programme of Controlled Thermonuclear Fusion (NPCTF), 2019-2020, PI, Joint project of UoI, NTUA, IPP, and University of Texas and Institute for Fusion Studies (IFS)
2. "On ITER equilibria, stability, and dynamics with sheared flow in connection with advanced confinement regimes", NPCTF, 2017-2018, PI, Joint project of UoI, IPP, CTP and IFS, approved by the EUROfusion consortium as complementary research project
3. "Hamiltonian methods and numerical algorithms for fusion plasmas", NPCTF, 2015-2016, PI, Joint project of UoI, NTUA, Aristotle University of Thessaloniki, IPP, Center of Theoretical Physics, Marseille (CTP), Graz University of Technology, and IFS, approved by the EUROfusion consortium as complementary research project
4. "Investigation of negative-energy perturbations in certain classes of collisionless Maxwell-drift kinetic equilibria and of their impact on magnetic confinement systems", EURATOM, 1996-1999, Coordinator, Fixed contribution contract between EURATOM and UoI
5. "Multi-dimensional multi-fluid plasma models for modeling the alpha particles from thermonuclear reactions using the two-fluid approximation", NCTP, 2017-2019, In collaboration with the Institute of Electronic Structure and Laser FORTH, Heraklion, Greece