

## Microwave and Optics Application Group

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### Department

Electronics, Computers, Telecommunications and Control

### Main Team Members

- Ioannis Tigelis, Professor
- Dr. George Latsas, Postdoctoral Researcher
- Dr. Zisis Ioannidis, Postdoctoral Researcher
- Dr. Panagiotis Gerolymatos, Postdoctoral Researcher
- MSc. Athanasios Zekas, External Partner
- Dimitrios Peponis, PhD Candidate
- Anastasios Zisis, Graduate Student

### Short Description

- Theory and applications of microwaves mainly in interactions of electromagnetic waves with electronic beams with applications in the design of gyrotrons and other high-power microwave sources.
- Propagation and scattering of electromagnetic waves in dielectric waveguides with applications in the design of optical components.
- Boundary values problems in nanostructures and their applications in the design of novel quantum structures.
- Development and use of parallel programming codes in complex electromagnetic problems.
- Antennas theory and applications.

### Selected Publications

- G. Gantenbein et al., Experimental investigations and analysis of parasitic RF oscillations in high-power gyrotrons, *IEEE Transactions on Plasma Science Special Issue on High-Power Microwave Generation*, vol. 38, no. 6, pp. 1168–1177, 2010.
- A. B. Manenkov et al., Scattering from an abruptly terminated planar metamaterial waveguide, *Radiophysics and Quantum Electronics*, vol. 53, no 3, pp. 191–200, 2010.
- Z. C. Ioannidis et al., Azimuthal mode coupling in coaxial waveguide and cavities with longitudinally corrugated insert, *IEEE Transactions on Plasma Science*, vol. 39, no. 5, pp. 1213–1221, 2011.
- G. P. Latsas et al., Dependence of parasitic modes on geometry and attenuation in gyrotron beam-tunnels, *IEEE Transactions on Plasma Science: Special Issue on High-Power Microwave Generation*, vol. 40, no. 6, pp. 1538–1544, 2012.
- J. Jelonnek et al., From series production of gyrotrons for W7-X toward EU-1 MW gyrotrons for ITER, *IEEE Transactions on Plasma Science*, vol. 42, no. 5, pp. 1135–1144, 2014.

## Research Projects

- National Research Project on Thermonuclear Fusion, European Commission and General Secretary of Research and Technology (GSRT), 1999–2013, NCSR Demokritos, National Technical University of Athens, Aristotle University of Thessaloniki, University of Thessaly, University of Ioannina, FORTH, Technical University of Crete, Cyprus University.
- *Design and Development of European Gyrotron*, F4E–2009–GRT–049, F4E, May 2010 – August 2012, CRPP-EPFL, IHM-KIT, CNR and ENEA. Design and development of the European coaxial gyrotron 170 GHz – 2 MW for ITER.
- *Design and Development of European Gyrotron*, F4E–2012–GRT–432, F4E, September 2012 – June 2014, CRPP-EPFL, IHM-KIT, CNR and ENEA. Design and development of the European conventional gyrotron 170 GHz – 1 MW for ITER.
- *EuroFusion, Work Package Heating and Current Drive (WPHCD)*, European Commission and GSRT, 2014 – 2018. Participation in the activities for the design and development of DEMO gyrotron.
- *Design and Development of European Gyrotron*, F4E–2014–GRT–553, F4E, July 2014– June 2016, CRPP-EPFL, IHM-KIT, CNR and ENEA. Design and development of the European conventional gyrotron 170 GHz – 1 MW for ITER.

## Webpage

[http://moag.phys.uoa.gr/moag\\_en/](http://moag.phys.uoa.gr/moag_en/)

