

Maria Mitrou

Electrical and Computer Engineer



PERSONAL INFORMATION

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EDUCATION

1.2023 – 5.2024

9.2019 – 9.2021

High Voltage Laboratory, Dept. of Electrical and Computer Engineering, University of Patras, Greece

10.2021 – 12.2022

Laboratory of Subatomic Physics and Cosmology, University Grenoble Alpes, France

**Ph.D., Electrical and Computer Engineering (University of Patras)
& Docteur de l'Université Grenoble Alpes (École doctorale I-MEP² – University Grenoble Alpes)**

Dissertation topic: Study of the production mechanisms of hydrogen (H⁻) and deuterium (D⁻) negative ions in a continuous and pulsed microwave plasma through complementary diagnostic techniques

Supervision: Prof. Panagiotis Svarnas and Prof. Stéphane Béchu (50%/50% on the basis of a bi-lateral agreement for a joint Ph.D. program)

Funding: Three-year scholarship from the "Andreas Mentzelopoulos" foundation of the University of Patras

9.2013 – 7.2019

Dept. of Electrical and Computer Engineering, University of Patras, Greece

Diploma of Electrical and Computer Engineering (Integrated Master's degree – 7.79/10)

Master thesis topic: Upgrade of electrostatic probe and negative ion photodetachment system for low-pressure cold plasma diagnostics (submitted on 15.7.2019; pp.158)

PROFESSIONAL AND RESEARCH EXPERIENCE

22.11.2023 – 27.11.2023 (Proposal No. 20230042)

13.10.2021 – 18.10.2021 (Proposal No. 20210078)

14.09.2020 – 21.09.2020 (Proposal No. 20191404)

"SOLEIL" synchrotron facility, Atomic Energy Commission (CEA)/National Center for Scientific Research (CNRS), Saint-Aubin, France

Ph.D. Researcher

Participation in the experiments on the DESIRS beamline, VUV-Fourier Transform branch.

Project subject: Investigations of the formation of rovibrationally excited D₂ molecules produced in ECR plasmas by means of VUV-FT absorption spectroscopy.

10.2019 – 12.2019

Dept. of Electrical and Computer Engineering, University of Patras, Greece

Teaching assistant

Assistant in the execution of the laboratory exercises related to the courses: "Power Systems Analysis" (7th semester) and "High Voltages" (7th semester) of the undergraduate curriculum.

7.2017 – 9.2017

Motor Oil (Hellas) Corinth Refineries S.A., Greece

Electrical engineering intern

Assisting the engineers of the electrical maintenance department of the refinery. Experience in maintenance operations in substations and on medium-power motors.

LANGUAGES

Greek – Native language

French – Working proficiency

English – Bilingual proficiency & C1 certificate

Russian – Elementary proficiency

JOURNAL PUBLICATIONS

[J4] Isotope effect in plasmas driven by ECR modules towards H⁻ and D⁻ production

Plasma Sources Science and Technology **32**, 105001 (2023) (doi: 10.1088/1361-6595/acfbf5)

M. Mitrou, P. Svarnas, S. Béchu

[J3] H⁻ and D⁻ production efficiency in a multi-dipole ECR-plasma source

Journal of Physics: Conference Series **2244**, 012007 (2022) (doi:10.1088/1742-6596/2244/1/012007)

M. Mitrou, P. Svarnas, S. Béchu

[J2] Experimental study on dynamic effects of H⁻ and D⁻ negative ions in an ECR-plasma source

Journal of Physics: Conference Series **2244**, 012006 (2022) (doi:10.1088/1742-6596/2244/1/012006)

M. Mitrou, P. Svarnas, S. Béchu

[J1] Last experimental and theoretical advances in the production of negative ions in Caesium-free plasmas

The European Physical Journal D **75**, 227 (2021) (doi:10.1140/epjd/s10053-021-00228-y)

F. Taccogna et al.

BOOK CHAPTERS

[B1] ECR-driven negative ion sources operating with hydrogen and deuterium

Chapter 12 in "Physics and applications of hydrogen negative ion sources", Edited by M. Bacal, Springer series on atomic, optical, and plasma physics vol. 124 Springer, Cham., (2023) (doi:10.1007/978-3-031-21476-9_12)

P. Svarnas, M. Mitrou, J.L. Lemaire, L. Gavilan, N. de Oliveira, S. Béchu

CONFERENCES

[C3] Laser-induced photodetachment diagnostic for interrogating pulsed ECR-driven plasmas: Application to H⁻ and D⁻ negative ions

Poster presentation, International Conference on Ionized Gases (ICPIG XXXVth Edition), Egmond aan Zee, The Netherlands, 9-14 July 2023

M. Mitrou, S. Béchu, P. Svarnas

[C2] Cylindrical SDBD of well-defined expansion area for standardized studies

Poster presentation, International Conference on Ionized Gases (ICPIG XXXVth Edition), Egmond aan Zee, The Netherlands, 9-14 July 2023

K. Giotis, P. Svarnas, M. Mitrou, K. Gazeli, G. Lombardi, S. Béchu

[C1] Two-laser photo-detachment for negative ion diagnostic: Installation and preliminary results in the H⁻ source "Prometheus I"

XXXIV International Conference on Phenomena in Ionized Gases (XXXIV ICPIG) & 10th International Conference on Reactive Plasmas (ICRP-10), Sapporo, Hokkaido Japan 14-19.7.2019

M. Mitrou, P. Svarnas, S. Aleiferis, S. Béchu, A. Lacoste

EXPERTISE

- Low-pressure, ECR driven plasmas
- Theory of H⁻/D⁻ ion production
- Diagnostic techniques for plasmas (Langmuir probes, Laser-induced photodetachment, Optical emission spectroscopy, Tunable diode-laser absorption spectroscopy (TDLAS), VUV Fourier transform absorption spectroscopy using synchrotron radiation)

SKILLS

- **Software:** MATLAB (MathWorks), Origin (OriginLab), COMSOL Multiphysics, AutoCAD (Autodesk), C programming language
- **Technical competences:**
 - Handling vacuum systems, optical components, high voltage equipment, basic hand tools
 - Experience with Class 4 laser operation with high understanding of the necessary security precautions

REFERENCES

- **Panagiotis SVARNAS** (Professor, Dept. of Electrical and Computer Engineering, University of Patras, Greece)
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Office phone: (+30) 2610 996 417
- **Stéphane BECHU** (Research Director, Laboratory of Subatomic Physics and Cosmology (LPSC-CNRS), France)
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