



# Taha EL HAJJI

Postdoctoral Researcher at Aalto University  
on High-Speed Electrical Machines



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[Website](#)



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## EXPERIENCE

- 2022-** **AISIN, United Kingdom.**  
Electromagnetic Research Engineer.
- 2022-** **Aalto University, Espoo, Finland.**
- Postdoctoral Researcher on Modeling of High-Speed Electrical Machines,
  - Teaching Course of [Finite Element Theory in Electromechanics](#),
  - Instructor of Laboratory work [Electromechanics](#),
  - Supervisor of PhD and internship students,
  - Responsible for the scientific communication: [Website](#) and [Linkedin page](#) of the research group.
  - Responsible for the scientific communication: [Website](#) and [Linkedin page](#) of the project CoE-HiECSs.
- 2018-2022** **STELLANTIS, French Automotive Company, Vélizy, France.**  
Research and Development Engineer, Industrial PhD work.
- 2021** **Laboratory SATIE – Paris-Saclay University, Gif-sur-Yvette, France.**  
Supervisor of Master's Thesis  
« Experimental Evaluation of AC Losses in Slot's Windings at high frequency ».
- 2021** **CNAM, French Graduate School in Electrical Engineering, Paris, France.**  
Supervisor of Practical Works for Graduate Students.
- 2020** **EPE 2020 – ECCE: European Conference on Power Electronics**  
Co-Chair of Conference Session.
- 2018** **STELLANTIS, French Automotive Company, Vélizy, France.**  
Master Thesis: Modeling Analysis of Innovative Hybrid Electric Vehicles.
- 2017 – 2018** **University of Paris Diderot, Paris, France.**  
Tutor of Mathematics for Undergraduate Students.
- 2017** **AKKA Technologies, Blagnac, France.**  
Bachelor Thesis: Sizing of input PWM's Filter by analytic calculus to optimize the mass of the drone Omega.
- 2016 – 2017** **Laboratory LAPLACE – ENSEEIHT Engineering School, Toulouse, France.**  
Academic Project: Sizing of the converter of an electric vehicle.

## EDUCATION

- 2018 – 2023** **Paris-Saclay University – Laboratory SATIE, Gif-sur-Yvette, France.**  
(March)  
In partnership with STELLANTIS (French Automotive Company)  
Ph.D.: [Modeling and Optimization of High-Speed Electrical Machines for Electric Vehicles](#).
- 2017 – 2018** **Paris-Saclay University, Top French University in Electrical Research, Gif-sur-Yvette, France.**  
Master of Science by Research: Automotive Propulsion and Electrification.
- 2015 – 2017** **ENSEEIHT, Top French Graduate Schools in Electrical Engineering, Toulouse, France.**  
Master of Electrical Engineering: Electrical Machines, Power Electronics, Control.
- 2015 – 2016** **University of Toulouse III, Toulouse, France.**  
Bachelor of Mathematics: Linear Algebra, Probability, Functional Analysis, Topology.
- 2012 – 2015** **CPGE Henri Poincaré – Pothier, Nancy-Orleans, France.**  
French Preparatory Classes in Mathematics, Physics and Programming: *Three years of advanced classes to prepare fresh high school graduates to sit highly competitive national entrance exams.*

## PUBLICATION

Google Scholar: [Profile Taha EL HAJJI](#)

- 2023**      **AC Losses in Windings: Review and Comparison of Models with Application to Electric Machines**, T. El Hajji\*, S. Hlioui, F. Louf, M. Gabsi, A. Belahcen, G. Mermaz-Rollet, M. Belhadi, *IEEE Access, Early Access*, (DOI: [10.1109/ACCESS.2023.3345014](#)).
- 2023**      **Benchmark of High-Speed Electric Machines for Fully Electric Regional Aircraft Targeting 20kW/kg Specific Power**, T. El Hajji\*, A. Lehtikainen, A. Hemeida, F. Martin, A. Belahcen, *Conference COMPUMAG 2023, Kyoto, Japan*.
- 2023**      **Optimal Design of High-Speed Electric Machines for Electric Vehicles: A case Study of 100 kW V-shaped Interior PMSM**, T. El Hajji\*, S. Hlioui, F. Louf, M. Gabsi, G. Mermaz-Rollet, M. Belhadi, *Machines* 11, no. 1: 57, (DOI: [10.3390/machines11010057](#)).
- 2020**      **Hybrid model for AC Losses in High Speed PMSM for arbitrary flux density waveforms**, T. El Hajji\*, S. Hlioui, F. Louf, M. Gabsi, G. Mermaz-Rollet, M. Belhadi, *ICEM Conference 2020, Gothenburg, Sweden*, (DOI: [10.1109/ICEM49940.2020.9271017](#)).
- 2019**      **Efficiency Improvement of a Series-Parallel Hybrid Electric Powertrain by Topology Modification**, B. Kabalan, E. Vinot, C. Yuan, R. Trigui, C. Dumand, T. El Hajji\*, *IEEE Transactions on Vehicular Technology* 2019, (DOI: [10.1109/TVT.2019.2952190](#)).
- 2019**      **Sensitivity Analysis on the Sizing Parameters of a Series-Parallel HEV**, T. El Hajji\*, B. Kabalan, Y. Cheng, E. Vinot, C. Dumand, *Conference of IFAC AAC 2019, Orleans, France*, (DOI: [10.1016/j.ifacol.2019.09.065](#)). Awarded: Young Author Award.

## SKILLS

<b>Softwares</b> (Comsol, Ansys, Femm)	<b>Communication</b>	<b>Project Management</b>	<b>Rigorous</b>
<b>Programming</b> (Matlab, Python, Caml, Latex)	<b>Self-Motivation</b>	<b>Critical Thinking</b>	<b>Attentive to Details</b>

## AWARDS

- 2019**      **Young Author Award**, IFAC AAC Conference 2019, *Orleans, France*.

## LANGUAGES

<b>English</b> Fluent	<b>French</b> Mother tongue	<b>Finnish</b> Basics
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## HOBBIES

<b>Scientific Communication on LinkedIn</b> (2 years)	<b>Guitar</b> (8 years)	<b>Music Theory</b> (9 years)	<b>Taekwondo</b> (3 years)	<b>Brazilian Jiu Jitsu</b> (1 year)
<b>Swimming</b> (12 years)	<b>Soccer</b> (10 years)	<b>Chess</b> (10 years)	<b>Sudoku</b> (5 years, School Award)	<b>Kung-Fu</b> (1 year)