

Postdoctoral Researcher, Metasurfaces for Future  
Communications  
Aalto University

Direct Link: <https://www.AcademicKeys.com/r?job=248001>

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Posted Oct. 31, 2024, set to expire Mar. 2, 2025

**Job Title** Postdoctoral Researcher, Metasurfaces for Future  
Communications

**Department** T411 Dept. Electronics and Nanoeng

**Institution** Aalto University  
, , Finland

**Date Posted** Oct. 31, 2024

**Application Deadline** Open until filled

**Position Start Date** Available immediately

**Job Categories** Post-Doc

**Academic Field(s)** Electrical and/or Electronics

**Job Website** [https://aalto.wd3.myworkdayjobs.com/aalto/job/Otaniemi-Espoo-Finland/Postdoctoral-Researcher--Metasurfaces-for-Future-Communications\\_R41312-3](https://aalto.wd3.myworkdayjobs.com/aalto/job/Otaniemi-Espoo-Finland/Postdoctoral-Researcher--Metasurfaces-for-Future-Communications_R41312-3)

**Apply By Email**

**Job Description**

Aalto University is where science and art meet technology and business. We shape a sustainable future by making research breakthroughs in and across our disciplines, sparking the game changers of tomorrow and creating novel solutions to major global challenges. Our community is made up of 13 000 students, 400 professors and close to 4 500 other faculty and staff working on our dynamic campus in Espoo, Greater Helsinki, Finland. Diversity is part of who we are, and we actively work to ensure our community's diversity and inclusiveness. This is why we warmly encourage qualified candidates from all backgrounds to join our community.

The School of Electrical Engineering is one of the six schools of Aalto University. Our portfolio covers fields from natural sciences to engineering and information sciences. In parallel with basic research, we develop ideas and technologies further into innovations and services. We are experts in systems

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science; we develop integrated solutions from care of the elderly to space robotics. The School is an international unit with close to 60 professors and 2 000 full-time students, including over 200 doctoral students.

[\[url=http://www.aalto.fi/en/department-of-electronics-and-nanoengineering/designer-materials-and-devices\]](http://www.aalto.fi/en/department-of-electronics-and-nanoengineering/designer-materials-and-devices)The Designer Materials and Devices Group at the Department of Electronics and Nanoengineering is looking for a highly motivated Postdoctoral Researcher to work on Metasurfaces for Future Communications, related to

[\[url=https://www.defense.gov/News/Releases/Release/Article/3880782/\]](https://www.defense.gov/News/Releases/Release/Article/3880782/)a large international project &#34;Self-Programmable Metasurface Networks for Wireless Communications and IoT&#34;.

#### Scientific context

6G will enable revolutionary technologies like the Internet of Everything, 3D holographic communication, robotics, Industry 4.0, and wireless brain-computer interactions. A key challenge for 6G, which will operate at sub-THz frequencies, is high signal attenuation in the atmosphere and common urban materials like concrete. To overcome this, 6G will require novel solutions such as reconfigurable intelligent surfaces (metasurfaces). These passive adjustable structures can deflect electromagnetic waves in specific directions, optimizing the wireless environment by enhancing communication without adding costly active components.

#### Your role and goals

As a postdoctoral researcher, you will contribute to advancing the science necessary to enable next-generation communication systems based on metasurfaces and revolutionizing communication networks and IoT. You will work on new physical mechanisms in electromagnetic wave control and design application-oriented metasurface geometries supporting human-machine interaction. You will collaborate with the multidisciplinary project team and possible industrial partners. The research methodology will have both theoretical, simulation, fabrication, and experimental components.

There are possibilities for research collaboration and extended visits to the following project partners: A. Alù (City University of New York), H. Krishnaswamy (Columbia University), M. Rinaldi (Northeastern University), and S. Shakkottai (University of Texas at Austin), Z. Sun (Aalto University), and N. Ravaja (University of Helsinki).

The expected starting date for the position is negotiable but preferably January 1, 2025 and it is intended for full-time work. The selected person will work under supervision of [\[url=https://scholar.google.fi/citations?user=&hl=en\]](https://scholar.google.fi/citations?user=&hl=en)Assistant Professor Viktor Asadchy and [\[url=https://scholar.google.fi/citations?user=&hl=en\]](https://scholar.google.fi/citations?user=&hl=en)Emeritus Professor Sergei Tretyakov. The successful applicant will have a possibility to cooperate with world-

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class researchers, publish in high-profile journals, supervise students, attend scientific conferences, and go on research visits to the external collaborators.

Your experience and ambitions

As a successful candidate for this position, you must have: \* A doctoral (PhD) degree in electrical engineering, physics, or similar. \* Strong background in electrodynamics and excellent mathematical skills. \* Experience in metasurface or RIS design. \* Ability to generate own research ideas. \* Proficiency in electromagnetic simulation software, such as CST Studio Suite, COMSOL Multiphysics, or ANSYS HFSS and electronic design software, such as ADS. \* High proficiency in Matlab, Python, or similar programming software. \* Solid list of publications. \* Prior student advisor experience. \* High motivation, patience, and stress resistance. \* Excellent written and verbal communication, including presentation skills. \* Highly proficient English language skills. \* Excellent organizational skills, attention to details, and ability to meet deadlines. \* Willingness to learn and work collaboratively in a research environment.

Skills, knowledge, and abilities in the following areas are not required but highly desirable: \*

Experience in printed electronics, RF circuit design, and antenna array theory. \* Industrial or start-up experience. \* Solid grant writing experience. \* Eligibility and willingness to apply for research funding (less than 7 years passed after the first PhD). \* Experience in machine learning or computational electromagnetics.

The applicant is expected to: \* Publish in top journals and participate in scientific conferences. \* Lead research proposal preparation. \* Guide master's and doctoral students. \* Participate as a teaching assistant for courses at Aalto. \* Undertake one or several research visits abroad to external partners.

The primary language of communication within the group is English.

What we offer

Aalto University follows the salary system of Finnish universities. The salary ranges for a postdoc from 4020 € to 4200 € per month, depending on previous experience, and the postdoc contract will be made for at least 2 years (6-month probation). The contract includes Aalto University occupational healthcare. Among European cities, Helsinki is special in being safe, clean, and close to nature, with a high quality of life. English is widely spoken in Finland, and the University offers free introductory courses in Finnish. The university is located at Otaniemi campus in Espoo (10 km from the city center of Helsinki), which is one of the largest hubs of high-tech in Northern Europe. Our Department is very international with professors and students coming from all around the world.

Join us!

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To apply, an application must include:

1. CV (including list of publications and names of three references)
2. Letter of motivation (maximum 2 pages)
3. Certified copies of doctoral, master's, and bachelor's degree certificates (or equivalents) with their transcript of records. Include their translations, if the originals are not in English.

All material should be submitted in English in pdf format. The application should be sent through our recruitment site (link 'Apply' below) by November 27, 2024. Email applications will not be considered. We encourage candidates to apply early. Screening of applications will begin immediately and continue until the position is filled. Aalto University reserves the right for justified reasons to leave the position open.

Please note: Aalto University's employees and visitors should apply for the position via our internal system Workday -&gt; find jobs (not external aalto.fi webpage on open positions) by using their existing Workday user account.

If you wish to hear more about the position, you can reach out to Prof. Viktor Asadchy (viktar.asadchy at aalto.fi). In recruitment process related questions please contact HR Partner Ms. Karoliina Walldén (karoliina.wallden at aalto.fi).

Want to know more about us and your future colleagues?

You can watch these videos:

[url=https://www.youtube.com/watch?v=&#61;5k\_og\_6zUJQ]https://www.youtube.com/watch?v=&#61;5k\_og\_6z

and [url=https://www.youtube.com/watch?v=&#61;dUfEGVM-

ZP8&feature=&#61;youtu.be]https://www.youtube.com/watch?v=&#61;dUfEGVM-

ZP8&feature=&#61;youtu.be

About Finland

Finland is a great place for living with or without family - it is a safe, politically stable and well-organized Nordic society. Finland is consistently ranked high in quality of life and was just listed again as the happiest country in the world: [url=https://worldhappiness.report/news/its-a-three-peat-finland-keeps-top-spot-as-happiest-country-in-world/]https://worldhappiness.report/news/its-a-three-peat-finland-keeps-top-spot-as-happiest-country-in-world/. For more information about living in Finland:

[url=https://www.aalto.fi/en/careers-at-aalto/living-in-finland]https://www.aalto.fi/en/careers-at-

aalto/living-in-finland & https://www.aalto.fi/en/services/welcome-to-aalto-university-and-finland-info-package .

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**Contact Information**

Please reference Academickeys in your cover letter when  
applying for or inquiring about this job announcement.

**Contact**

Finland