

AAROODD UJJAYINI RAMACHANDRAN

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PERSONAL DETAILS

Surname, First name	Ujjayini Ramachandran, Aaroodd
Date of Birth	06 Mar 1998
Place of Birth	Calicut, India
Nationality	Indian
Correspondence address	Bismarckstraße 34, 52066 Aachen, Germany

EDUCATION AND TRAINING

Master of Science in Physics	Oct 2019 – Jan 2022
Rheinisch-Westfälische Technische Hochschule Aachen	Aachen, Germany
<i>Master Thesis: Sterile neutrino production mechanisms in presence of Non-Standard Interactions</i>	Astroparticle Physics and Cosmology track GPA: 1,6

Bachelor of Technology in Engineering Physics	Jul 2015 – May 2019
National Institute of Technology Calicut	Calicut, India
<i>Bachelor Thesis: Optically controlled droplet transport platform</i>	First Class with Distinction (GPA: 8.37/10)

Summer School in Astronomy and Astrophysics	May 2018 – Jun 2018
Kodaikanal Solar Observatory(KSO)	Kodaikanal, India
<i>An Introductory Summer school on Astrophysics with hands-on experiments</i>	

Higher Secondary Education	Jun 2013 – May 2015
Kunnamangalam Higher Secondary School	Kozhikode, India
<i>Subjects: Physics, Chemistry, Maths and Biology and Languages.</i>	Final score: 1200/1200

WORK EXPERIENCE

Wissenschaftliche Hilfskraft	Sep 2021 – Oct 2021, Sep 2022 – Oct 2022
<i>RWTH International Academy</i>	<i>Aachen, Germany</i>

- * Tutoring for the bridging course in Statistical Physics (*Theoretische Physik IV*) as part of Masters College in Physics for international students at RWTH Aachen.

Wissenschaftliche Hilfskraft	May 2021 – Jul 2021, May 2022 – Jul 2022
<i>TTK Institut RWTH Aachen, Karlsruher Institut für Technologie</i>	<i>Germany</i>

- * \LaTeX typesetting of lecture notes for the courses offered by Prof. Felix Kahlhöfer in WiSe 20/21, SoSe 21 and SoSe 22.

Summer Project Fellow	Jun 2018 – Jul 2018
<i>Indian Institute of Astrophysics</i>	<i>Bangalore, India</i>

- * Successfully completed a summer project on “*U band photometric studies of high-declination fields of interest to UV astronomy*” using data from Himalayan Chandra Telescope, *Hanle*.

PROJECTS

Sterile neutrino dark matter production mechanisms in presence of NSIs	Dec 2020 - Dec 2021
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- * Master thesis under the supervision of [Prof. Dr. Achim Stahl](#) and [Dr. Werner Rodejohann](#).
- * Studied the effect of scalar, axial-vector and pseudoscalar non-standard neutrino self-interactions on the Dodelson-Widrow mechanism with Majorana neutrinos and demonstrated that experimentally allowed neutrino NSSIs can lead to sizable shifts in allowed parameter space.

Optically controlled droplet transport platform	Jul 2018 – Jun 2019
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- * Bachelor thesis under the guidance of Dr. Subramanyan Namboodiri Varanakkottu
- * Design and implementation of a novel lab-on-chip “optically controlled digital microfluidic device” for on-demand droplet transport and exploring its applications in biochemical analysis.

PROGRAMMING SKILLS

Experienced in: PYTHON, MATHEMATICA, L^AT_EX

Familiar with: C, TensorFlow, MATLAB

LANGUAGE SKILLS AND CERTIFICATIONS

- **English/TOEFL iBT** : **C2 (114/120)**
- **German** : **A2**
- **Hindi: Intermediate** **Malayalam: Native**
- **GRE General** : **324/340**

CO-CURRICULAR ACTIVITIES

- Award for Outstanding Student Commitment at RWTH Aachen for mentoring new international students as part of *Master's College Physics Fellow Student Mentoring* program.
- Tutored 10th grade students from 2015 to 2019 as part of Kerala government program to improve exam results in rural areas.
- Participated and won various quizzing championships and organised competitions as part of Enquire quiz club, NIT Calicut

ACHIEVEMENTS AND SCHOLARSHIPS

JN Tata Endowment in Physics

2019-2021

- * Awarded by Tata trusts for the higher education of Indians abroad in Humanities, Natural Science, and Technology.

STIBET Studienabschluss-Stipendium

2021

- * Scholarship for degree completion as part of scholarship and advising program for international students and doctoral candidates (STIBET), funded by German Academic Exchange Service (DAAD).

INSPIRE Scholarship

2015

- * Scholarship for Higher Education in Natural Science by the Department of Science and Technology (DST), India for students scoring highest grade in State board exam

Focus Area Science Technology Summer Fellowship (FAST-SF) in Astrophysics

2018

- * Summer Fellowship program organized jointly by Indian Academy of Sciences, Bengaluru, Indian National Science Academy, New Delhi & National Academy of Sciences, India

PUBLICATIONS AND POSTER PRESENTATIONS

- Benso, Cristina, Werner Rodejohann, Manibrata Sen, and **Aarodd Ujjayini Ramachandran**. "Sterile neutrino dark matter production in presence of nonstandard neutrino self-interactions: An EFT approach," *Phys. Rev. D* **105** (5), 055016 (2022), [arXiv:2112.00758 \[hep-ph\]](https://arxiv.org/abs/2112.00758).
- Cristina Benso, **Aarodd Ujjayini Ramachandran**. *Impact of neutrino effective NSSI on sterile neutrino dark matter production in the early universe*. Poster presented at: Neutrino 2022; June 2022; Virtual Seoul. [DOI:10.5281/zenodo.6805243](https://doi.org/10.5281/zenodo.6805243)