KARTHIK KRISHNAPPA CHANDRASHEKARA

orcid id 0000-0002-2998-5320

EDUCATION

Degree Doctor of Philosophy

2021 - present

Heidelberg Graduate School for Physics (HGSFP)
Ruprecht-Karls-Universität Heidelberg
Specialization in Ultracold Quantum Gases

Degree Master of Science

2016 - 2019

Bonn-Cologne Graduate School of Physics and Astronomy (BCGS)
Rheinische Friedrich-Wilhelms-Universität Bonn
Specialization in experimental Atomic, Molecular and Optical Physics

Degree Bachelor of Science

2013 - 2016

St. Joseph's College (Autonomous)
Bangalore University

RESEARCH EXPERIENCE

Graduate Ph.D. student, PI, Heidelberg

2021 - present

Involved in building a new Dysprosium quantum gas experiment in the Quantum Fluids working group.
Advisor: Dr. Lauriane Chomaz

Graduate Research Assistant, IAP, Bonn

2020

Engaged in projects that helped better understand a quantum gas experiment at a technical level from simulating atom cloud dynamics to image processing and building tools for controlling laboratory instruments.

Graduate Master Student, BCGS, Bonn

2019

Title: A high power Ti:Sa laser system for atomic quantum walks experiments
Description: Quantified laser frequency noise by the use of an optical frequency discriminator and suppressed it by means of measuring and reducing optical path length differences to prevent spurious transport, heating and loss of ultracold Caesium atoms trapped in a two-dimensional state-dependent optical lattice.
Advisor: Prof.Dr. Dieter Meschede

Undergraduate Student Intern, NCBS, Bangalore

2016

Title: Building a Non-Linear "Argumental" Oscillator
Description: Built a working model of a pendulum that oscillates with discrete amplitudes (Doubochinski's pendulum) for use as a feasible alternative to non-linear oscillators in certain experiments at the intersection of Non-Linear Dynamics and Biology.
Advisor: Dr. Shashi Thutupalli

Undergraduate Student Intern, NCBS, Bangalore

2015

Title: Investigation of Head Stabilization in the Oleander Hawk-Moth and the possible role of mechano-sensors and/or vision in its mediation
Description: Experimentally investigated head stabilization in a moth in order to determine if they actively stabilize their vision mechanically when subjected to a roll perturbation.
Advisor: Dr. Sanjay Sane

TEACHING EXPERIENCE

Graduate Tutor, HGSFP, Heidelberg

Jun '22 - Jun, '23 Tutored and graded students on an experimental course introducing basic optics concepts.

Graduate Teaching Assistant, BCGS, Bonn

Oct '18-Mar, '19 Tutored and graded students on problem sheets for the Advanced Quantum Theory course offered by Prof. Dr. Hartmut Monien.

EMPLOYMENT HISTORY

Feb-Jun, 2020 *Scientific Assistant*
Institut für Angewandte Physik, Universität Bonn, Germany

Oct '18-Mar, '19 *Tutor*
Physikalisches Institut, Universität Bonn, Germany

GRANTS, SCHOLARSHIPS, AWARDS

Jun '22, Jun, '23 *Travel Grant*
Provided by STRUCTURES YRC

Jul '20-Dec, '20 *Graduate student scholarship*
Provided by Prof. Dr. Dieter Meschede
Institut für Angewandte Physik, Universität Bonn, Germany

April '19-Dec, '19 *Master student scholarship*
Provided by Prof. Dr. Dieter Meschede
Institut für Angewandte Physik, Universität Bonn, Germany

PUBLICATIONS

2023 Jin S., Gao J., **Chandrashekara, K.**, Gölzhäuser C., Schöner J., and Chomaz L., ***Two-dimensional magneto-optical trap of dysprosium atoms as a compact source for efficient loading of a narrow-line three-dimensional magneto-optical trap***, *Phys. Rev. A*, **108**, 023719.

2021 Ramola, G., Winkelmann, R., **Chandrashekara, K.**, Alt, W., Xu, P., Meschede, D., & Alberti, A., ***Ramsey Imaging of Optical Traps***, *Phys. Rev. Applied*, **16**, 024041.

SCHOOLS, CONFERENCES, WORKSHOPS, SEMINARS

Conference Long-Range Interactions in the Quantum

September, 2023 Donostia-San Sebastian, Spain

Conference Quantum Systems at Extreme Conditions

November, 2022 Bingen am Rhein, Germany

Workshop Intensive week on Vortex Physics

September, 2022 Kaiserslautern, Germany

Conference Young Atom Opticians' Conference

August, 2022 Universität Stuttgart, Germany

Conference DPG Spring Meet

March 2019 Universität Rostock, Germany

School Weekend Seminars

2017-2019 DPG Physikzentrum, Bad Honnef, Germany

School Research Education Advancement Programme

2013-2016 Jawaharlal Nehru Planetarium, Bangalore, India

School NCBS Physics of Life Monsoon School 2014

July 2014 Simons Centre for the Study of Living Machines, NCBS, Bangalore, India

SKILLS

Programming MATLAB - Extensive experience with the environment - have written entire classes for image analysis and correction, data analysis, modelling and simulation, instrument operation.
PYTHON - Basic familiarity.
MATHEMATICA - Basic familiarity.

Hands-on Building basic electronics such as Low Pass Filters, Voltage Limiters, Regulators, Arduino/Raspberry-Pi based circuits, Control Systems design and implementation, familiarity with basic FPGA programming, operation of high-power Lasers, handling of Optics, Opto-Mechanics, use of precision instruments for measurement and data acquisition, hands-on experience with metal fabrication, 3D design and printing.

Languages English (Full professional proficiency), German (Basic words and phrases)

REFERENCES

Dr. Lauriane Chomaz · chomaz@physi.uni-heidelberg.de
Group leader, *Quantum Fluids*, PI, Universität Heidelberg