

SARA CHOPRA

Hamburg, Germany || Science Communication & Physics

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Physicist and science communicator with a background in theoretical particle physics and research-driven public outreach. Experienced in translating complex scientific concepts into accessible visual and digital formats, including interactive web explainers and multimedia content. Currently developing web-based communication projects for the Cluster of Excellence "Advanced Imaging of Matter" (CUI) while expanding skills in machine learning and AI-assisted workflow development. Seeking roles that combine scientific rigour with communication, digital & design strategy, and AI-assisted workflows.

Professional Experience

Student Assistant (PR & Communication Department)

03/2024 - 03/2026

Cluster of Excellence for Advanced Imaging (CUI), Universität Hamburg

- Managing social media content and strategy for varied audiences across Instagram, LinkedIn, and web, including research interview and lab tour video production (ideation to production to editing) and supported outreach events on-site, eg. Science City Day.
- Designing outreach assets for events and digital platforms (posters, graphics, reels/videos, print materials). (See samples here)
- Provide structured office + analytical support: maintain internal datasets for projects along with performed event feedback evaluation.
- Gave a lecture to high school students on "Particle and Accelerator Physics" for Lights and Schools.
- Currently developing a CUI web infographic explaining the different research areas.

Independent Project: CMS Detector Web Infographic

Scrollytelling webpage explaining detector components and physics. Built with HTML/CSS/JS; used AI assistance to speed up implementation; content inspired by CERN/CMS public resources. (10 day build)

Education

10/2022 - 04/2026

Universität Hamburg,
Germany

Masters in Physics

Accelerator and Particle
Physics (specialisation)

Master Thesis Project :

'Sum Rules in Extended Higgs
Model and their Phenomenological
Applications'

Master's Result: (German System)
(Grade Range 1-6 (1- highest grade))

Final Result : 1.29

2019 - 2022

AIAS, Amity University,
Noida, India

B.Sc. (Honors) Physics

Bachelor's Result: (Indian Grading System) (10 is the highest grade)

1st Year: 9.52/10

2nd Year: 9.38/10

3rd Year: 9.30/10

2005 - 2019

Springdale's School, Pusa
Road, New Delhi, India

Higher Secondary Schooling

High School Result: (Indian Grading System) (100% is the highest grade)

12th Standard: 91.5%

Science Stream with Economics & German

10th Standard: CGPA: 10/10

Communication & Media

- Science communication for specialist & non-specialist audiences.
- Social media content + strategy
- Short-form video production/editing + interview coordination

Design & Digital

- Canva, Adobe Creative Suite
- Blender (for 3D scientific visualisation)
- MS Office
- Web basics: HTML/CSS

Languages

English: Fluent (Native level),

German: Level (B2.1) Intermediate,

Hindi: Native

Conferences & Workshops

- KMBP School on QFT, Higher Topological Algebra, and Gauge Symmetry (2024)
- DPG (Deutsche Physikalische Gesellschaft) Conference, 2024
- NIUS Camp (Homi Bhabha Centre for Fundamental Research)
- Science Communication Workshop, Humboldt University (Dr. Alison Pinto, 2024)

Scholarships/Awards

1. Merit Scholarship for International Students: 2024 - 2025 (Universität Hamburg)
2. 50% Academic Fee Scholarship in Bachelor's: 2019 & 2021 (Amity University)
3. Goethe Institute: Scholarship Program (Sri Lanka): June 2017

Technical & Analytical Skills

- Specialised in Theoretical and Phenomenological particle Physics & Computational Analysis.
- Programming & Data Analysis
- Scientific Writing & Documentation

Technical Software Used:

Mathematica (FeynCalc, FeynArts, SARAH), Python, SQL, LaTeX.

Volunteering & Extracurricular Activities

- Volunteer at eVidyaloka (2022): Taught and created educational content for students in rural areas.
- Each One Teach Many Program (2014-2019): Provided education to eight underprivileged children.

Hobbies and Interests

- **Art & Design:** Sketching, acrylic & oil painting
- **Media & Storytelling:** Video editing, science interviews
- **Music, Cooking, Travel:** Engaging with cultures and creative expression
- **Psychology and Neuroscience**

Research Experience

Master Thesis

07/2023 - 04/2026

Sum Rules in Extended Higgs Models and Their Phenomenological Applications, Institute of Theoretical Physics II, Universität Hamburg

Supervisors: Dr. Gudrid Moortgatt Pick and Dr. Sven Heinemeyer

- Conducted theoretical and phenomenological analysis of extended Higgs sector models (2HDM, Georgi Machacek, Septet).
- Applied Mathematica and Python packages to evaluate phenomenological constraints and to conduct comparative analysis.
- Compared theoretical predictions and consistency of BSM models to collider observables at the LHC and computing allowed and excluded cross sections using HiggsTools.

Research Internship: Humboldt University, Berlin (2024)

10/2024 - 01/2025

Under Dr. Olaf Hohm (RTG 2575: Rethinking Quantum Field Theory)

- Studied homotopy transfer and BV algebras for gauge-invariant formulations of the path integral; extended the BV formalism to 4-term complexes with gauge symmetries.
- Investigated Chevalley–Eilenberg algebras and their role in deriving the Faddeev–Popov determinant; participated in weekly seminars on higher algebra and QFT.

Volunteering and Leadership Experience

Vice President and Member:

2019 - 2022 (Member 3 years, VP: 2020 - 2021)

KugelBlitz Physics Club, Amity University

- Led the transition from offline to online events, successfully implementing activities like research discussions, virtual treasure hunt, and board games.
- Established the club's organizational structure and social media presence, implementing a strategy that increased event audience from 5 to 50-75 participants.
- Acquired sponsorships and expanded active membership from 10 to 25, strengthening community engagement.
- Organised 20+ events and led brainstorming sessions, fostering a culture of innovation and participation.

Content & Design Team Member

04/2020 - 09/2020 (6 months)

Volunteer at NGO: GirlUp Empower

- Created over 10 articles on topics like women in science, contemporary beauty standards, and refining research and writing skills.
- Designed around 5-10 social media posts weekly, ensuring visually appealing and informative content for a broader audience.
- Developed an understanding of aesthetics, creative storytelling, and audience engagement through marketing-focused design.