

Omar M. Elshenawy

Cairo, 24th of February, 2004
Mathematics BSc, Constructor University, Bremen, Germany
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STATEMENT

A firm believer that mathematics is at the heart of everything. Aims to foster a culture of awareness, understanding & appreciation of mathematics. Working towards becoming a world-class researcher, might collect a fields medal along the way.

EDUCATION

Constructor University , Bremen, Germany Bachelor of Science in Mathematics, Minor in Data Science — <i>Relevant Courses</i>	September 2022 — Current Current Grade: B+
Cairo University , Giza, Egypt Summer School in Mathematical Physics	July 2024 — Current

RESEARCH

Dessins D'enfants & Complete Regular Maps — The Polymath Jr <i>Research Group led by Professor Lisa Berger</i>	Stony Brook, New York, US June 2024 — Current
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✦ we are interested in studying the deep consequences of Belyi's theorem and the Uniformization theorem, with complete regular maps as the main object of attention. From constructions of complete regular maps of higher genus to induced Riemann surfaces by *complete regular dessins*, there are many interesting questions that arise.

Interaction Energy of Quasi-particles in a Bose gas <i>Student Research Group led by Professor Sören Petrat</i>	Bremen, Germany November 2022 — February 2023
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✦ an early involvement working within a research team, there was mentorship on effectively integrating mathematical and computational methods into a research project. Bose-Einstein condensate is cool (!)

ENTREPRENEURSHIP

ξ — Xi! Maths <i>Founder & Director</i>	Teaching Statement March 2024 — Current
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- transforming the academic journey of 10+ students, with 4+ courses featuring +120 hours of content.
- implementing a learning methodology that captures the uniqueness of each student's learning journey.
- illustrating the study of Mathematics as a construct of intellectual empowerment, a poetry of eloquence & precision.
- fostering questioning minds that are unafraid of frustration, eager to make mistakes and persevere to the ultimate triumph.

LEADERSHIP

The Mathematics Society @ Constructor University <i>Co-lead</i>	Bremen, Germany September 2023 — Current
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- mentoring younger students; and motivating dialogue that dismantles math stereotypes.
- orchestrated a renaissance of the mathematics community, with a record 22+ members in 2023-24.
- introduced Math Sundays, a dynamic initiative dedicated to immersive mathematical talks within the community.

Google Developer Student Club @ Constructor University <i>Project Management Core</i>	Bremen, Germany October 2022 — Current
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- mentored [ResQme 2x](#), [ExoHeal](#), [Grub On](#), [Navimate](#) to a top-100 worldwide spot in the Google Solution Challenge.
- conducted 10+ workshops for Google and the Hult Prize Foundation on the human element of design thinking.
- directed 400+ design thinkers to design creative solutions for the 17 UN Sustainable Development Goals.

PROFESSIONAL EXPERIENCE

Mathnasium of the Courtyard <i>Assistant Director</i>	Giza, Egypt April 2022 — August 2022
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- analyzed student attendance trends, maintained a target 3:1 student-to-instructor ratio with a 90% success rate.
- implemented an individual, developmentally appropriate learning experience for 35+ students.
- built family relationships; solicited parent feedback; generated leads.

<i>Lead Mathematics Instructor</i>	November 2021 — April 2022
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- orchestrated the instructor team (floor) to provide excellent instruction.
- mentored and oriented newly-hired instructors to facilitate an easy transition into their roles.
- provided individual instruction to high volumes of students (3 - 4 students) concurrently.

SCHOLARSHIPS & AWARDS

Die Sparkasse Mathematik, €10.800 recognition of students with outstanding aptitude and enthusiasm for mathematics .	Bremen, Germany 2022 — 2025
Jacobs University Grant, €18.000 awarded on a performance potential basis to talented students from around the world.	Bremen, Germany 2022 — 2025

SEMINARS & TALKS

Fibrations & Applications to Computations of Higher Homotopy Groups	Spring 2024
<i>Seminar in Algebraic Topology</i>	Talk, Paper, Slides
Zermelo's Theorem in Game Theory	Spring 2024
<i>The Mathematics Undergraduate Seminar @ Constructor University</i>	Paper
The Banach-Tarski Paradox	Fall 2023
<i>The Mathematics Undergraduate Seminar @ Constructor University</i>	Paper, Slides
Mathe Beim Friseur — Die Russellsche Antinomie	Fall 2023
<i>General Audience Talk on Russell's Paradox</i>	Slides

PROJECTS

sustainApple	Application
<i>Joint with Fabian Vogel — jacobsHack! 22</i>	November 2023
<ul style="list-style-type: none"> • aims to reduce carbon footprint by comparing its users' sustainability scores (in apples) to create self-awareness. • uses geo-locational input to provide insightful inferences on CO2 emissions of a user's vehicle, inspired by the EEA database. 	
Numerical Schemes in the Context of Differential Equations	Notebook
<i>Joint with Mohammad Bennani — Implemented in Python</i>	June 2024
<ul style="list-style-type: none"> • introduces standard approximation schemes in the realm of numerical solutions and intermediate, boundary value problems. • comprehensively treats the implicit and explicit Euler schemes, as well as the finite differencing and shooting methods. • numerically solves the heat equation (PDE) in two dimensions for given initial conditions. 	

SOFTWARE Java — JavaScript — NumPy — SciPy — Matplotlib — Pandas — Scikit.learn — SQL — L^AT_EX — Excel

LANGUAGES German (*B1*) — English (*Fluent*) — Arabic (*Native*)
