



## Project Overview

### Building Mathematical Capacity Against Social Discrimination: A Pilot Youth Hackathon Initiative

*Implemented by the International Mathematics Master (IMM)*

*Funded by the Elsevier Mathematical Sciences Sponsorship Fund*

The International Mathematics Master (IMM) is launching the pilot initiative **"Building Mathematical Capacity against Social Discrimination"**, a youth-focused program that brings mathematics to the forefront of social transformation. Through a two-day hackathon and national panel event at the **Abdus Salam School of Mathematical Sciences (AS-SMS)** in Lahore, Pakistan, the project equips young mathematicians to analyse, model, and propose solutions to systemic discrimination using rigorous mathematical tools.

The initiative will take place on **13-14<sup>th</sup> June 2026** and is designed to empower students from across Pakistan—particularly women, differently-abled scholars, minority communities, and students facing socio-economic disadvantage.

1. **An Hackathon Day:** on March 28 2026, selected BSc level mathematicians from all over the country will be selected to participate in a day-long hackathon in which groups will analyse, model and propose mathematical solutions to understand and address social discrimination issues. Through participatory and group-based activities, these students will work on mathematical models that explore urgent questions: How can we predict the spread of social discrimination? What are the dynamics of unfair decision-making? How do multiple disadvantages — gender, disability, socio-economic background — intersect to block access to STEM education?
2. **A Panel Event:** On March 29 2026, a panel event is organised to voice issues, opportunities and challenges of STEM education and the roles a wide set of stakeholders have in improving social inclusion and scientific change-making careers.

## **Core Components of the Initiative**

### **Youth Mathematical Hackathon – 13<sup>th</sup> March 2026**

A full-day, group-based mathematical hackathon where 40 selected students of Bachelor's level/affiliation work on modelling real-life problems involving:

- Spread and dynamics of social discrimination
- Inequalities in educational access
- Decision-making biases and statistical discrimination
- Intersectional barriers (gender × disability × socio-economic background)

Participants will develop models using differential equations, stochastic processes, optimisation, and statistical reasoning, supported by trained IMM student facilitators.

### **Panel Event – 14<sup>th</sup> March 2026**

A public-facing event featuring:

- Pakistani women mathematicians
- Researchers in STEM equity and human rights
- NGO representatives
- Educators and policy advocates
- Hackathon teams presenting their insights

The panel strengthens dialogue between scholars, civil society, and youth on how mathematical reasoning can illuminate social systems and drive change.

## **Purpose and Rationale**

Many students in mathematically developing countries exhibit remarkable potential yet face systemic barriers to fully engaging in STEM fields. These barriers include unequal access, socio-economic limitations, gender-based discrimination, inaccessibility, and limited visibility in the national mathematics ecosystem.

This initiative addresses such challenges by:

- Showing how mathematics can model social inequalities and discriminatory systems
- Providing students with tools to build, test, and discuss models of real-world decision-making

- Strengthening national networks of mathematicians, universities, NGOs, and inclusion advocates
- Elevating underrepresented voices in mathematics through participatory, collaborative learning

Mathematics becomes not only a scientific discipline, but a tool for fairness, representation, and social awareness.

## Partners and Support

This initiative is **funded by the Elsevier Mathematical Sciences Sponsorship Fund** and implemented in collaboration with IMM Pakistan, university partners, NGOs, researchers, and local accessibility advocates.

IMM acknowledges the importance of a functional, accessible venue and is committed to providing necessary accommodations to ensure meaningful participation for all.

## Why Attend?

- Engage with mathematical approaches to real-world discrimination and inclusion
- Learn from leading women researchers and mathematicians in Pakistan
- Connect with national stakeholders advancing STEM equity
- Discover the models and insights developed by youth participants
- Strengthen collaboration between academia, civil society, and future scientists

## Contact

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