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Promoting High Energy Physics to under-represented groups in Pakistan

Particle physics outreach plays a crucial role in inspiring future scientists and fostering public engagement with fundamental research. Our initiative focuses on making collider physics accessible in Pakistan, breaking systemic barriers, and promoting inclusivity in science. Since 2021, students from the University of Karachi have actively led various educational programs, public events, and media campaigns to bring high-energy physics to a wider audience, particularly underrepresented groups.

To introduce physics to younger learners, one of our group members translated two particle physics-themed coloring books from the ATLAS experiment into Urdu, an official language of Pakistan. These books help children understand how experiments detect particles and how scientists collaborate to uncover the universe's mysteries. Distributed freely by the Khwarizmi Science Society, they have reached marginalized and rural communities across Pakistan.

For university students, we have organized events such as the Particle Physics Outreach Event for University Students in Pakistan (2021) and the Video Making Competition on Particle Physics and the ATLAS Experiment (2024). These programs have been particularly impactful for students at institutions lacking dedicated particle physics courses and research opportunities.

Our efforts also extend to high school students. In 2022, we organized Pakistan's first-ever Particle Physics Masterclass, providing hands-on experience with real particle physics data. Additionally, to make particle physics accessible to students with disabilities in Pakistan, we developed a video about particle physics and the ATLAS experiment in Urdu Sign Language.

To further bridge the gap in computational physics, we hosted a workshop introducing underrepresented communities to the Julia programming language and its applications in high-energy physics. A newly launched initiative also involves visiting schools to deliver interactive lectures on high-energy physics, aiming to inspire students to pursue careers in STEM.

Through these initiatives, we are committed to building a more inclusive and scientifically engaged society, ensuring that particle physics is accessible to all.

This poster will highlight our journey in promoting high-energy physics with limited resources, featuring feedback from event participants, key highlights from each initiative, and upcoming activities.

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