

Physics Camp for Girls

Final Report

WHY DID WE ORGANIZE THE “PHYSICS CAMP FOR GIRLS” event in Pakistan ?

Based on data collected from the UNESCO and UN-Women (2019), female researchers account for less than 30% of all researchers. This figure is even lower in most developing countries, such as Pakistan. To improve the socio-economic condition and to attain UN Sustainable Development goals, Pakistan needs to empower its female population. With this motivation, we arranged a two-day virtual physics camp for girls studying in grades 9 to 12 in Pakistan on 18-19 December 2021. The principal goal of this camp was to inspire women at an early age to pursue Science, specially Physics.

FORMAT OF THE CAMP

The camp was held for two days for around 4 hours each day. It included talks, quizzes, competitions, career counseling, and physics demonstrations.

DEDICATION

The organizing committee dedicated the camp to their mothers to show respect for their struggles and efforts, as seen in the image below.



Snapshot of Dedication page from “Physics Camp for Girls” website (<https://physicscamp4girls.pk/dedication.html>)

COLLABRATORS

Due to collaborator support, we were able to get rich content and demonstrations for the camp, allowing all participants to enjoy the lectures at ease. Our collaborators were as follows:

Science Fuse, Pakistan	https://sciencefuse.com/
Department of Physics, University of Karachi, Pakistan	https://uok.edu.pk/faculties/physics/index.php
Khwarizmi Science Society, Lahore, Pakistan	https://khwarizmi.org/
SPIE Student Chapter - Lahore University of Management of Science, Lahore, Pakistan	https://osa.lums.edu.pk/students-societies/spie-chapter-lums
TDF MagnifiScience Center, Karachi , Pakistan	https://magnifiscience.org/

SPONSORS

Due to our sponsors, we were able to execute the event without much hassle. The names of organizations and institutions who sponsored the event are as follows:

Institutes	Country	Amount	Amount in Pakistani Rupees
Institute of Physics in Cantabria	SPAIN	450 EUROS	84,959
Dr. Gwen Grinyer (on behalf of University of Regina)	CANADA	230 CAD	31,435
Simon Fraser University	CANADA	100 CAD	13,523
University of Ottawa	CANADA	100 CAD	13,000
Dr. Isabel Trigger (on behalf of TRIUMF)	CANADA	100 CAD	13,000
International Training Network of Statistics for High Energy Physics and Society		100 EUROS	19,000
Royal Physics Society	SPAIN	150 EUROS	29,000
Perimeter Institute for theoretical Physics	CANADA	200 CAD	26,000
ATLAS - EXPERIMENT		GOODIES	GOODIES
CMS - EXPERIMENT		GOODIES	GOODIES
EUROPEAN SOUTHERN OBSERVATORY		GOODIES	GOODIES
TOTAL Amount			229,917 RS

TALKS

The talks in the camp involved various subjects from astronomy to quantum computers. All these talks were given by Pakistani female Ph.D. scholars and science outreach specialists. All talks were appreciated by the audience due to the clarity in the presentations, explaining hard concepts in layman's terms. The sneak-peak of the speakers are as follows:



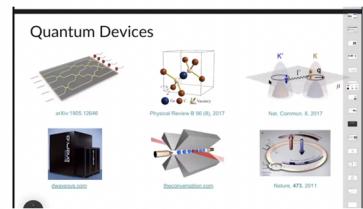
Ms. Yumna Majeed showing participants the meteorites from moon (left) and mars (right)

تمہاری داستان بھی نہ ہو گی داستانوں میں

NOKIA MOBILE PHONE MARKET SHARE 2002-2014



Ms. Mahnoor telling participants why Nokia failed due to not adopting new methods



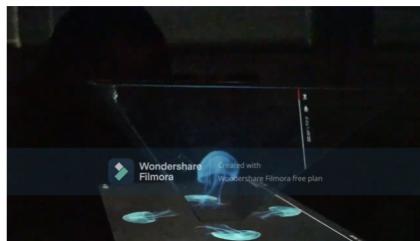
Ms. Aroosa explaining about the quantum devices in her talk "The Quantum Supremacy"

DEMONSTRATIONS

A physics camp is not a camp unless there are Physics demonstrations and we had quite a few. Some of our collaborators performed live demonstrations, while others recorded demonstrations, explaining the relevant Physics along the way. A sneak peak of Physics demonstrations from the event can be seen below.



Ms. Lala from ScienceFuse about the demonstrating Newton's Law



SPIE Chapter of LUMS University showing various principles related to optics



Representative from Magnifi-Science centre explaining the concepts of electromagnetism through demonstration

MISCELLANEOUS

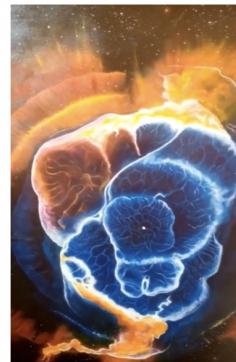
The camp not only had talks and demonstrations, but we went outside of the box and included other visual aids to inspire physics learning in the young audience.



Life of Marie Curie - Ted-Ed (Urdu Voice)



Interviews of various female scientists and grad students (Urdu Subtitles)



Ms. Sana (Organizing Committee member) painted Cat Eye's nebula

Everything is recorded and has been recorded and uploaded on [youtube](#).

COMPETITIONS

We held three types of competitions to motivate active participation and keep the participants excited for the event. The competition were as follows:

- Quizzes (During the event)
 - Held both days.
 - Majority of the questions were pertaining to the lectures in the camp.
 - We used “Blooket” as the quiz platform to handle a large audience.
 - Top 10 scores were given a DIY Astronomical telescope kit.
 - Other 60 top scorers were given goodies: books, “Physics Camp for Girls” cups.
- Art (Subsequent to the event)
 - Participants were asked to draw anything or write anything related to Physics at the end of each day.
 - The 15 winners were awarded with one (or two) goodies from ATLAS (book, shirts etc), CMS (book, shirts etc), or ESO (posters).
- Project (Subsequent to the event)
 - In this competition, participants had to write a report and do a video explanation on a given project: Making and Testing a Pinhole Camera (Grades 9 and 10) and Tracking of International Space Station (Grades 11 and 12).
 - 8 Winners were given cash prizes.

IMPACT

- Around 300 girls joined on the first day and 350 girls on the second day.
- All the participants enthusiastically participated in all the activities of the event.
- The medium of instruction throughout the event was the Urdu language, so that all participants could understand.
- Activities including biographies, physics demonstrations, talks, quizzes, and many more inspired attendees to pursue physics for higher education.
- In the post-event survey ,52 girls filled out the form and 90% were thinking of going for physics for their bachelor’s degree.

EXPENSES

The table below lists the expenses of the event.

Expenses	Quantity	Amount in Pakistani Rupees
Souvenir Cups (Given out to Quiz winners)	60	25,000
Video editing + posters	1	15,000
Advertisement - Traditional (posters) all over pakistan	1	20,000
Advertisement - Social media	1	10,000
Website hosting and domain	1	8,000
DIY Astronomical Telescope kit	10	25,000
Telephone charges + network packages	1	5,000
Blooket - Quiz platform	1	1,500
Cash Prizes (Given to project competition winners)	8	35,000
Science books - (Given out to quiz winners)	60	25,000
Delivery (for cups and books)	60	15,000
Supplies to Nebula-eye painting	1	10,000
Certificates + refreshment for volunteers	10	5,000
tax duties on goodies + other minor logistics		10,000
Total expense		209,500
Total Funding		229,917
Amount left		20,417 RS

ALLOCATION OF THE REMAINING ACCOUNT

The amount that was left from the event was ~100 USD (in today' rate) .

In February 2022, one of my teachers from my alma mater (University of Karachi) told me about a remote and destitute village in Pakistan where they had no school.

The elderly of this village (Zangi Khan Rajero Baloch Village) value the importance of education and have created a crude setup to educate the children of the village with their own limited resources.



- I decided to raise the funds (1550 USD) to build a school in that village and the 100 USD left from Physics Camp for Girls was used as seed money.

As of 20 May 2022, the construction is nearly complete (started on 15th April 2022).



The school is planned to accommodate 150 children from this village and from 5 neighboring villages, since the nearest school is some 10 km away.

CONCLUSION

My team and I are honored that you supported our idea and helped us by providing the support that was needed to initiate the event. We believe that through our camp we have definitely changed the perspective of not at least some of the participants that Physics is an active field with many interesting avenues of research to pursue. Some girls asked very interesting and captivating questions till the end of sessions, from warp drive to quantum mechanics.

My favorite moment from this camp was when Miss Yumna Majeed showed meteorites from the moon and Mars to the audience and everyone was stunned and amazed at the same time. The participants were spamming the Zoom chat about how beautiful it all looked.

Once again, thanks to all the organizations and the people who contributed to this event, without whose assistance it would not have been possible. We were able to pull this off and also able to build a school. :)

Regards,

Hamza Hanif on behalf of the **Physics Camp for Girls** team