



NEWSLETTER

COMMISSION INTERNATIONALE D'OPTIQUE • INTERNATIONAL COMMISSION FOR OPTICS

SPIE Outreach Grant: A Bail Out from Economic Crisis in Pakistan

“The Black Hole” is an organization dedicated to promoting art, science, and culture.



The Active Learning in Optics (ALO) group commenced its activities for the year 2023 with two scheduled events on January 3rd and 5th at "The Black Hole".

In early 2022, Pakistan witnessed a rapid deterioration in its economic condition. Throughout the past year, the nation has grappled with a mounting balance of payment crisis, marked by depleting foreign reserves, ballooning debt, and record-breaking inflation level.

By the first half of 2023, Pakistan found itself on the brink of a potentially catastrophic economic default. At a critical juncture, the country's reserves could only cover approximately two weeks' worth of imports, owing to the concurrent pressure of debt repayments. In a desperate bid to avert default, the government implemented stringent import restrictions to gain control over dollar outflows. Consequently, the local currency's value plummeted to an all-

time low, with a scarcity of foreign currency both in the open market and within banking channels. This scarcity even extended to essential transactions, such as sending funds abroad for purposes like supporting children studying overseas.

While the adoption of an International Monetary Fund (IMF) program and financial support from key allies, including Saudi Arabia, the UAE, and China, have provided a lifeline for Pakistan's economy, the situation is still precarious. Numerous challenges persist and if not effectively managed, they pose a serious risk of pushing Pakistan further into economic turmoil. The road to recovery is long, but careful and strategic measures can lead to sustained economic stability. The impact of the economic downturn hit the middle-income class particularly hard, affecting many students from modest backgrounds at Quaid-i-Azam University, a public sector institution that draws students from across Pakistan. Many of these students had been actively involved in my outreach initiatives, and often volunteer to help me prepare and on the day.

On any outreach activity day, I need to leave home early to pick up my team of volunteers. The pickup points vary, ranging from Quaid-i-Azam University, which is 30 km away from my home, to volunteers taking Uber from their homes to a designated meeting point.



The Active Learning in Optics (ALO) Group had historically relied on self-funding for most endeavors.

“In early March 2023, a ray of hope emerged with the approval of the SPIE Outreach grant”.



Prof. Dr. Imrana Ashraf coordinates the activities of the Active Learning Optics (ALO) Group in Pakistan.

Once assembled, we load into my car and head towards our destination. However, due to the recent economic crisis, rising fuel prices, and my retirement from my university position, financial constraints posed significant limitations on the scale and scope of my outreach initiatives. Additionally, it has made it harder for my students to help me conduct activities in remote areas. SPIE support proved to be a blessing, enabling the ALO Group to plan more activities and travel to the remote areas of Khyber Pakhtunkhwa (KPK). By the end of 2023, we have conducted a total of 10 outreach activities, including four in the remote areas of KPK.

The SPIE Outreach grant played a pivotal role in overcoming financial constraints and facilitating impactful educational initiatives, marking a positive turn for the ALO Group in a challenging economic climate.

The ALO group commenced its activities for the year 2023 with two scheduled events on January 3rd and 5th at "The Black Hole." These events were tailored for fifth-year and O-level high school students, respectively. Since the year 2022, ALO has been actively involved in overseeing the optics lab at The Black Hole and has established a long-term collaboration to bring science education to students.

S.No	Date	No. of Participants	Venue	Facilitators	Volunteers
1	03-01-2023	25	Quaid-i-Azam University School	Dr. Imrana	Masad Qayyum
2	05-01-2023	25	Quaid-i-Azam University School	Dr. Imrana	Masad Qayyum
3	16-05-2023	200	Phy. Depart. Quaid-i-Azam University	Dr. Imrana	Masad Qayyum
4	18-05-2023	300	International Islamic University Islamabad	Dr. Imrana	Masad Qayyum Osama bin Ijaz M. Ayaz
5	22-05-2023	250	Fatima Jinnah Women's University	Dr. Imrana	Masad Qayyum Osama bin Ijaz M. Ayaz
6	25-05-2023	150	Rawalpindi Women's University	Dr. Imrana	Masad Qayyum Osama bin Ijaz M. Ayaz
7	13-09-2023	300	Mardan Women's University	Dr. Imrana Dr. Raheel Ali	Masad Qayyum Osama bin Ijaz M. Ayaz
8	27-09-2023	300	Swabi Women's University	Dr. Imrana	Masad Qayyum
9	01-12-2023	350	Quaid-i-Azam University	Dr. Imrana Dr. Raheel Ali	Masad Qayyum Nimra Gazanfer M. Sami Shahid
10	08-12-2023	250	University of Swat	Dr. Imrana Dr. M. Zahid	Masad Qayyum Sanwal Farooq

Optics outreach 2023 at a glance



For the outreach activity in connection with International Day of Light, the ALO Group visited Fatima Jinnah Women's University (FJWU).



Several simple optical phenomena were demonstrated thanks to the Photonic Explorer kits.

For the younger participants, ALO utilized SPIE Explorer Optics kits, while the older students engaged with the Photonic Explorer kits enhancing their learning experience in the field of science. After receiving the **SPIE Outreach Grant**, we decided to go forward with four more activities in May. Although we originally planned to conduct some of these in remote areas in KPK, the compromised security concerns at the time limited us to schools in the twin cities (Rawalpindi-Islamabad).

Active learning in Optics (ALO) Group organized on May 16th a one-day Optics workshop at the Department of Physics on QAU campus. The event started with an oral presentation titled "**See It With Light**", followed by a demonstration on different kinds of light sources: sunlight, ordinary light, LEDs, and Lasers, properties of light (scattering reflection, refraction, transmission, and total internal reflection), geometrical optics, interference of light, diffraction and polarization.

In the afternoon, a virtual session was organized for a scientific talk on "Ultra-high repetition-rate fiber lasers: A new horizon in laser micromanaging and microsurgery" by Prof. Parviz Elahi from the Department of Physics at Boğaziçi University, Istanbul, Turkey. Utilizing the Pak-ICTP Alumni forum, Prof. Elahi's presentation attracted a significant virtual audience, including many undergraduate students who actively participated in the insightful discussion.

On the 18th of May, I gathered my team from Zero Point (the point where the distance of Islamabad is 0km), and we set off for the International Islamic University (female campus) in Islamabad. Upon reaching our destination, the scorching heat became inconsequential as we were greeted by a hall packed with over 300 enthusiastic students eagerly awaiting our workshop.

The event kicked off with a warm welcome note from the host, following which I delivered a presentation on the 'Importance of Light and Light-based Technologies,' which extended for almost an hour as I prefer interacting with students during my talks.

Afterwards, we conducted demonstrations of various optical phenomena. To ensure that all students, including those seated at the back of the hall, had a clear view, we utilized Iriun Webcam. We capture my actions on a table using a cellphone, which was then projected onto a multimedia screen for enhanced visibility.

Following a brief lunch break, we engaged in an initial Q&A session where students exhibited remarkable interest in the subject. We then organized the students into 10 groups and extended invitations for personalized assistance. My team and I worked closely with each group, providing additional insights, and the activity concluded with the distribution of certificates. To my delight, many girls came up to me expressing their desire to capture the moment with a photo.

“We can proudly reflect on a highly successful year for the ALO Group.”



The Active Learning in Optics (ALO) Group organized on May 16th a one-day Optics workshop at the Department of Physics on QAU campus.

For our third optics outreach activity in connection with IDL, we visited Fatima Jinnah Women's University (FJWU) on the 22nd of May. After picking up my students at Faizabad interchange, we reached the university after about an hour's drive. Dr. Waqar, the Head of the Physics Department, welcomed us warmly, having studied in the Department of Physics at QAU.

We were directed to the auditorium where the activity was scheduled to take place. The workshop commenced with a brief introduction to the outreach activity by the class representative of the 7th semester, the senior-most student in the Physics Department at FJWU at that time of the year. The students sat quietly, with only occasional murmurs audible. This reserved atmosphere is something I have often encountered before any activity, regardless of the age group – be it young girls of 6 and 7 years, high school students, or undergraduates in a university.

Prior to formal talks or demonstrations, I always make an effort to help them relax and create a friendly atmosphere for interaction. I want them to understand the difference between a workshop and the usual classroom setting. The event formally began with a talk on 'Light as a Way to Communicate.' Almost immediately, there was a noticeable change in the student's behavior, as they began making eye contact

with me. I concluded the talk on a positive note and opened the floor for discussion, addressing their questions and comments. Following the talk, we moved on to the demonstration session using the Iriun Webcam for better clarity. The students were visibly excited and motivated as they observed various optical phenomena and the laws of geometrical optics. After the demonstrations, we invited students to participate in hands-on activities, and they thoroughly enjoyed the session. As always, the day concluded successfully with the distribution of certificates of participation and group photos.

On May 25, 2023, our team visited Rawalpindi Women's University for a one-day workshop on optics. We arrived at 9 am, and everything seemed to be in order for the planned activities in the auditorium. However, Pakistan was experiencing an electricity shortfall exacerbated by the hot summer. Unfortunately, as soon as I began my talk on Light, the electricity went out, and the Physics department lacked a backup generator, forcing us to pause our activities there.

Initially, we decided to wait for the electricity to be restored and engaged in informal discussions with the students. However, the power outage persisted. Undeterred, the motivated students took the initiative to relocate the entire activity to the Computer Science depart-



Active learning in Optics (ALO) Group organized a one-day Optics workshop at the Department of Physics on QAU campus.



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ment's lab, which had a backup power supply from a UPS. I resumed my talk on "Say it with Light," and the students, keen to learn, actively participated in the interactive session, asking questions and sharing their thoughts.

Despite the initial setback, the activity proceeded smoothly. I concluded my talk with a question-and-answer session, after which we moved on to demonstrating the fundamental laws of Optics. The students not only observed but also conducted their experiments, making the session hands-on and engaging.

To conclude the day, certificates were distributed, and group photos were taken, capturing the smiles on the girls' faces. The students' enthusiasm and problem-solving skills were impressive.

Despite the unexpected power outage, the outreach activity at Rawalpindi Women's University turned out to be a memorable and successful event, showcasing the resilience and determination of both the organizing team and the students. They turned a challenging situation into an opportunity for learning and collaboration, leaving a lasting positive impression on everyone involved.

Khyber Pakhtunkhwa (KPK), a province in northwestern Pakistan, stands as the country's fourth-largest province by land area and third-largest by population. Peshawar, its capital, serves as the heart of the province. Its landscape is diverse, encompassing rugged mountain ranges, valleys, plains surrounded by hills, undulating submontane areas, and dense agricultural farms.

The province shares a substantial international border of 1100 km with Afghanistan to the west. Unfortunately, the conflict and instability in Afghanistan, particularly after the 9/11 attacks, have had negative repercussions for Khyber Pakhtunkhwa.

The aftermath of the US invasion of Afghanistan saw a significant influx of Afghan refugees into Pakistan, coupled with a rise in the frequency and scale of terrorist attacks within Pakistan.

Despite the end of major fighting in Afghanistan in 2021 and the victory of the Taliban, terrorism has increased due to the rise in militant groups operating from Afghanistan. **On the second anniversary** of the Taliban's rule, there were speculations regarding the reopening of schools and universities for girls in Afghanistan, but it has not materialized.

Girls' education has long been a subject of debate in Pakistan, with the lowest enrollment rates among Pashtun populations. In Khyber Pakhtunkhwa, more than two million children are out of school, with two-thirds of them being girls. The Active Learning in Optics (ALO) group initiated educational outreach activities in KPK in early 2019, beginning with a one-day workshop at Mardan Women University.

The second activity took place at Swabi Women University in October 2020, followed by a workshop at Sir Syed College in Wah Cantt in December 2021. In April 2022, the group visited Wah Women University, located near the border between Punjab and KPK.

The outreach activity at Rawalpindi Women's University turned out to be a memorable and successful event.



The ALO Group visited Rawalpindi Women's University for a one-day workshop on optics.

In 2023, the plan includes follow-up activities in Mardan and Swabi Women Universities, along with conducting outreach in the University of Swat and Karakoram International University. Despite the challenges in the region, the ALO group remains committed to promoting education and outreach initiatives.

On September 13, our five-member team, which included Dr. Raheel and myself, embarked on our journey from Islamabad at 7am. The motorway (free-way) travel proved to be exceptionally comfortable and safe, especially when adhering to the speed limit. We exited the motorway at Mardan interchange, patiently waiting for the driver from Mardan University to guide us to the downtown location of the university.

Upon our arrival, where we were warmly welcomed by the students. Dr. Ambreen Ayub, the Head of Physics, graciously introduced us to the faculty members and invited us to commence the planned activity. We included two talks: "Introduction to Laser" and "Working Principle of He-Ne Laser." I initiated the session by discussing the significance of light, delving into its crucial role in human life. Covering the basics of optical phenomena, I concluded with a brief introduction to lasers. Dr. Raheel then took the stage, delving into the intricacies of the He-Ne Laser.

Given the substantial number of attendees, we opted for hands-on demonstrations and experiments, projecting them onto a sizable screen for everyone to grasp. The He-Neon Laser apparatus took center stage as we explained its inner workings, providing a visual feast for the curious minds present. The session concluded on a high note with a cheerful group photo, capturing the collective energy of the day. Around 2pm, our team wrapped up the event and set course for Islamabad, leaving behind an engaging and illuminating experience that undoubtedly left a positive impact on both the students and ourselves.

On September 27, I embarked on my journey from Islamabad at 7am to reach Swabi Women University. To assist me in this activity, I picked up my best and only volunteer, Masad Qayyum, at the Islamabad Metro station. Our journey commenced around 8am as we headed towards Swabi.

Although I had previously visited Swabi University in 2020, they have since moved to a new campus located outside the city. Relying on Google Maps to navigate the unfamiliar route, we traversed bumpy roads, passing through sugarcane fields. The uncertain terrain left us momentarily unsure if we were on the right track. Nevertheless, we successfully reached Swabi University by 10am.



Students attending one of the talks

The ALO Group organized a one-day workshop on Optics and Fiber Optics Communications to commemorate the International Day of Light in 2023. The venue for this event was the Department of Applied Physical and Materials Sciences at the University of Swat, and it took place on December 8, 2023.

On December 7, accompanied by Dr. Muhammad Zahid and my team members, Masad Qayyum and Sanwal, we departed from Islamabad at around 11 am. Dr. Zahid took the wheel, and we reached Swat University at approximately 4:30 pm. Given the distance to our booked hotel, which was about an hour's drive away, we opted to stay at the university's bachelor house for the night. The next morning, on Friday, we arrived at the activity hall by 9 am. The hall was already brimming with students, and nearly 30 percent had to stand due to the limited seating available. A significant majority, approximately 85%, were female students eagerly anticipating the start of the interactive activity. The Vice-Chancellor of the University extended a warm welcome and presented shields in appreciation.

Following the welcome, I delivered a talk on the "Importance of Light," emphasizing its significance in daily life and covering the basics of Optics. Dr. Zahid then presented his talk on "Fiber Optics Communication," providing insights into both theoretical and experimental techniques. Later, we conducted demonstrations, and towards the end,

we invited students onto the stage to operate the apparatus themselves and ask any questions they had. Remarkably, the girls at Swat University demonstrated active participation, surpassing the level of engagement seen from the boys. We departed for Islamabad on December 9, 2023, around 11 o'clock, and reached Islamabad at approximately 5 pm, concluding a successful and enriching workshop at the University of Swat.

On December 1, 2023, Active Learning in Optics organized its second event at the Department of Physics, Quaid-i-Azam University. The seminar, held at 9 AM, attracted a group of enthusiastic BS students who actively participated in the proceedings. The topic of the seminar was a talk on the "Laws of Light."

The session was designed to be interactive and informative, incorporating live demonstrations and an explanation segment. Dr. Imrana and Dr. Raheel, serving as speakers, shared valuable insights into the laws governing light. The dynamic nature of the seminar allowed for an engaging discussion session, enabling students to interact with the speakers and seek clarification for any doubts they may have had. The event aimed not only to disseminate knowledge but also to foster a collaborative learning environment for the students at Quaid-i-Azam University.

Prof. Dr. Imrana Ashraf
Pakistan ICO Territorial Committee



Women were the majority of the attendants to the activities.

ICO Bureau elections will take place next October

The ICO Bureau elections will take place during the 26th General Meeting of the ICO.



Prof. Roberta Ramponi, ICO Past-President, chairs the ICO Nominating Committee.

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The 26th General Meeting (GM) of the International Commission for Optics (ICO) will take place during the next World Congress of the ICO that will be celebrated from 21st to 25th October 2024, as already announced on the official website of the ICO (e-ico.org). During the GM, elections to the ICO Bureau positions will be done.

According to the ICO rules and code, candidates for the Bureau may be nominated by the ICO Nominating Committee (NC) and/or by the Territorial Committees (TC). No other nomination may be received.

Endorsement of all candidates by their respective TC is requested in all cases. In addition, TC may endorse candidates from any Territory. At the time of the General Meeting, the delegation of the TC to the General Assembly makes endorsements in its name.

Endorsement means that the person is considered by the endorsing TC as a good person to stand for an ICO election and is to be understood as an intention, not an obligation, to support this candidate at the election, given the list of candidates at the time the endorsement is made. The NC establishes a first list of candidates that is sent to the TC along with the agenda of the General Meeting.

Nominations may be received until 24 hours before the election. After the closure of nominations, the NC establishes a final list of candidates. In addition, each candidate provides the NC with a short curriculum vitae and a statement on his/her policy if elected for distribution to the GM.

Tradition holds that during the first session of the GM, the NC presents its report and indicates the current list of candidates for the ICO Bureau offices. Elections are held during the second session of the GM. The elections are conducted by the chairperson of the NC. Secret ballots is the rule.

In the case of a tie for any vote, the elder candidate is declared elected. For any vote, if the number of candidates is equal to the number of seats, the NC Chairperson may decide that there is no vote and declare the candidate(s) elected.

Concerning the Vice-Presidents, the rule is that eight of them represent the TC Members and are elected by them, while an additional number of Vice-Presidents are appointed by the International Organization Members.

Prof. Roberta Ramponi chairs the ICO Nominating Committee

Forthcoming events with ICO participation

Below is a list of forthcoming events with ICO participation. For further information, visit their official websites listed below.

16-19 July 2024

International Conference on Applications of Optics and Photonics (AOP)

Aveiro, Portugal

Contact: Marta S. Ferreira

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<https://aop2024.org>

21-24 October 2024

XXVI International Commission for Optics World Congress (ICO-26)

Cape-Town, South Africa

Contact: Yaseera Ismail

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<https://e-ico.org/blog/ico26>

Responsibility for the correctness of the information on this page rests with the International Commission for Optics (ICO); <http://www.e-ico.org/>. **President:** Prof. John C Howell, Hebrew University of Jerusalem, Israel; john.howell@mail.huji.ac.il **Treasurer:** Prof. Joseph Niemela, International Center for Theoretical Physics, Italy; niemela@ictp.it. **Secretary:** Prof. Humberto Michinel, Universidade de Vigo, Spain; secretariat@e-ico.org.