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Pakistan Mathematical Society Newsletter



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Editorial

A newsletter serves as the pulse of a mathematical society, connecting members through the timely exchange of ideas, achievements, and developments. For the Pakistan Mathematical Society, our quarterly newsletter offers a vital platform to bridge gaps among mathematicians spread across the nation.

Beyond disseminating information, the newsletter encourages critical reflection on the state of mathematics in Pakistan. It promotes best practices, sparks academic debates, and motivates faculty members and students to pursue research of international standards. By showcasing emerging trends and collaborations, it fosters greater engagement within the local mathematical community and enhances Pakistan’s visibility on the global stage.

The newsletter also plays a pivotal role in bridging the communication divide between young scholars and experienced faculty. In a landscape where isolated working environments are common, such initiatives are crucial in cultivating a shared vision for the advancement of mathematics.

In essence, this publication aspires to be more than just a collection of articles—it aims to inspire, connect, and elevate the mathematical discourse in Pakistan.

Deteriorating Quality of Tertiary Education in Pakistan

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In recent years, the introduction of the Impact Factor (IF) as a central metric to gauge the quality of research in Pakistan's universities has sparked significant debate regarding its far-reaching consequences. What was initially intended to promote global visibility and foster a competitive research environment has instead led to a decline in the quality of research, supervision, and teaching. The reliance on this ill-conceived measure has encouraged malpractices that have fundamentally undermined the academic integrity of tertiary education in Pakistan. The effects are profound, affecting the quality of research output, the supervisory process, and the caliber of postgraduate students produced.

One of the most significant issues with the Impact Factor's dominance in Pakistan's academic landscape is the shift in focus from quality to quantity. Universities, under pressure to meet numerical targets, now prioritize the number of publications produced over the quality and originality of the research. Faculty members, eager to bolster their personal and institutional IF scores, are

incentivized to publish more papers, often at the cost of depth and rigor.

Instead of encouraging thoughtful and long-term research, this system promotes the production of superficial papers that offer little in the way of new insights or substantial contributions to the field. This obsession with numbers has resulted in a glut of publications that dilute the overall quality of academic work, leaving little room for meaningful, innovative research. As a result, the academic community is flooded with papers that prioritize meeting quotas rather than advancing knowledge.

The detrimental effects of the Impact Factor have also extended to the domain of research supervision. University faculty, in their quest for higher IF scores, are increasingly treating postgraduate students as tools for publication rather than as learners in need of mentorship. A worrying trend has emerged where supervisors pressure students to produce multiple research papers from a single thesis or project, often resulting in rushed and low-quality work. This practice compromises the academic development of students, leaving them ill-prepared for future research or professional endeavors.

This exploitation of students has contributed to an overproduction of degree holders whose qualifications are often paper-based rather than knowledge-based.

Supervisors, eager to extract maximum publications from their students, impose unrealistic deadlines and encourage a focus on quantity rather than quality. Consequently, students graduate with degrees but without the critical thinking skills, research capabilities, or deep understanding necessary to excel in their fields.

Another unethical practice that has flourished under the Impact Factor regime is ghost authorship, where individuals who have made little to no contribution to a research project are listed as co-authors in exchange for payment or favors. In Pakistan, this practice has become increasingly common as academics look for ways to inflate their publication records and, by extension, their Impact Factor scores.

This trend is deeply damaging to the integrity of academic research. It creates an environment where publications are treated as commodities to be bought and sold, rather than as meaningful contributions to knowledge. Supervisors, in particular, often engage in this practice by selling their students' research to external individuals who then attach their names as co-authors. This not only devalues the work of genuine contributors but also perpetuates a system where academic success is measured by one's ability to manipulate the system rather than by the quality of their research.

Perhaps the most worrying consequence of this flawed system is its effect on student motivation and skill development. In an environment where quantity is valued over quality, students are increasingly focused on mimicking and plagiarizing existing research rather than developing their own original ideas. The pressure to publish quickly leads students to adopt shortcuts, undermining their intellectual growth and research ethics.

This has resulted in a generation of postgraduate students who, despite holding degrees, are ill-equipped to succeed in academia or the job market. The skills that should define a well-educated postgraduate—critical thinking, problem-solving, and innovation—are being replaced by a reliance on replication and imitation. The graduates entering the workforce today are, by and large, unprepared to contribute meaningfully to their professions, a direct consequence of the declining quality of tertiary education in the country.

It is clear that the introduction of the Impact Factor as a primary metric for academic success in Pakistan has had unintended and damaging consequences. To reverse this trend, there is an urgent need for systemic reform. The focus must shift from purely numerical measures of productivity to a more qualitative assessment of research impact, originality, and relevance. Universities need to establish policies that emphasize ethical conduct in

research and supervision, ensuring that both students and supervisors are held accountable for their work.

Additionally, postgraduate education must prioritize student learning and development over the number of publications produced. Supervisors should be trained to mentor their students effectively, focusing on nurturing their intellectual and research capabilities rather than treating them as mere contributors to publication records. Without these reforms, the quality of tertiary education in Pakistan will continue to deteriorate, with long-term consequences for the country's academic, professional, and economic future.

In conclusion, while the introduction of the Impact Factor may have been well-intentioned, its application in Pakistan has led to a deterioration in the quality of research, supervision, and teaching. To restore the integrity of higher education, it is essential to rethink how research excellence is measured and to implement changes that prioritize quality over quantity.

Chauvinism and Creativity in Mathematics Departments

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Fear and authoritarian attitudes within mathematics departments in public universities in Pakistan have created a toxic academic environment, stifling creativity, autonomy, and critical thinking—qualities essential to higher education. Chauvinism among faculty and unwarranted interference in students' personal lives discourage independent thought and intellectual exploration. This control leaves students hesitant to express ideas or take academic risks, fearing repercussions. In mathematics, where innovation thrives on open dialogue and creative problem-solving, such an environment is particularly damaging.

The lack of professional boundaries allows some teachers to intrude into students' personal matters and lifestyle choices, eroding trust between faculty and students. Instead of fostering growth through mentorship, many teachers resort to rigid control, which discourages intellectual curiosity. As a result, students tend to conform to expectations rather than explore new ideas, leading to academic stagnation. This atmosphere impairs students' capacity to think independently, inhibiting their potential to engage meaningfully in mathematics, a field that demands creativity and collaboration.

To address these challenges, reform is essential. Fostering mutual respect between teachers and students and reinforcing the boundaries between personal and

professional matters are crucial for rebuilding trust. Faculty should focus on their role as mentors, supporting students' academic growth rather than controlling their personal lives. A culture of academic freedom is necessary to enable students to engage in mathematics without fear, allowing them to innovate and contribute meaningfully to the field.

Accountability mechanisms within departments must also be strengthened to ensure faculty act ethically and within the limits of their professional roles. Structural reforms, such as faculty development programs emphasizing respectful teaching practices and mentorship, could help shift departmental culture. Without such changes, the quality of education will continue to deteriorate, and students will remain disengaged and frustrated. Creating an environment where creativity is nurtured rather than suppressed is essential to restoring the purpose and integrity of mathematics departments in Pakistan's public universities.

The Decline of Mathematical Scholarship in Pakistani Universities

A troubling trend has emerged among mathematics students in public universities in Pakistan: an overreliance on lecture notes at the expense of reading well-regarded textbooks written by experts. Instead of

immersing themselves in high-quality material, students confine their study to notes prepared by their teachers—often compiled through cut-and-paste methods from various sources. This practice has fostered a narrow focus on passing exams rather than cultivating a deeper understanding of mathematical concepts, leading to an alarming intellectual myopia within the student body.

The emphasis on lecture notes, often simplified and fragmented, reflects an education system that prioritizes convenience and examination scores over genuine learning. Textbooks authored by experts provide not only comprehensive explanations but also nuanced insights into the underlying concepts. However, students' lack of engagement with these texts means they miss out on developing a solid conceptual foundation. In many cases, students approach mathematics as a series of disconnected formulas and methods rather than as a coherent and evolving field.

This myopic approach also has broader consequences. Mathematics demands not only the ability to solve problems but also critical thinking, creativity, and a deep understanding of abstract ideas. When students limit their learning to hastily prepared notes, they become conditioned to focus on memorizing techniques for exams rather than questioning, exploring, and applying what they learn. This undermines their ability to engage

meaningfully with complex problems, a key skill for anyone aspiring to excel in the subject.

A particularly unfortunate aspect of this trend is the students' lack of interest in the historical background of mathematical concepts. The evolution of mathematical ideas offers valuable insights into how breakthroughs are made, revealing the struggles, persistence, and creativity of the mathematicians who discovered them. Learning about these stories can serve as an inspiration, showing students that progress often requires curiosity, perseverance, and a willingness to embrace challenges. Unfortunately, students in these departments seldom explore the origins of the theorems and methods they study, leaving them disconnected from the richness of the discipline.

This focus on exam preparation rather than meaningful understanding ultimately weakens the students' ability to apply mathematics effectively. In a field that thrives on innovation and collaboration, students with a shallow grasp of concepts are unlikely to contribute productively. Over time, this approach can result in a generation of graduates ill-equipped to engage in advanced research or teaching roles, further eroding the quality of mathematics education in Pakistan's universities.

Addressing these issues requires a cultural shift within the departments. Teachers need to move beyond compiling superficial lecture notes and instead encourage students to engage with reputable textbooks. Promoting an appreciation of the historical development of mathematical ideas could also inspire students to pursue the subject more passionately. Departments should cultivate an environment where learning is valued over mere exam performance, fostering creativity and intellectual curiosity.

If mathematics students in Pakistan are to develop the skills needed for meaningful contributions to the field, they must break away from rote learning and embrace a broader approach. Engaging with expert texts, understanding the historical roots of concepts, and focusing on intellectual growth rather than short-term achievements are essential for restoring the integrity and purpose of mathematics education. Without such changes, the discipline will continue to suffer, leaving students unprepared for the challenges of both academia and the real world.

AI, Multimedia, and Seminar Structures in Mathematics

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The misuse of AI, multimedia, and seminar structures in mathematics is contributing to a decline in academic rigor. AI tools are often used without a deep understanding of their purpose, reducing complex problem-solving to mechanical exercises. Instead of enhancing learning, this reliance on technology undermines students' ability to engage with mathematical concepts critically.

Multimedia, meant to aid comprehension, is frequently overused or misused. Many presentations focus on superficial visual appeal, simplifying intricate topics and limiting the deep, abstract thinking necessary in mathematics. Speakers often read directly from the screen, making presentations disengaging and one-sided. When power failures occur, they are unable to continue, revealing a lack of familiarity with their material beyond what is shown on screen.

This leads to passive learning, where students receive information without engaging in problem-solving or critical thinking. Seminars, which should foster scholarly exchange and intellectual curiosity, are reduced to routine formalities with little academic engagement. The overreliance on slides and superficial presentations stifles discussion and deeper exploration of ideas.

To improve the quality of mathematical education, universities must encourage active learning and meaningful discourse, reducing dependence on technology and emphasizing critical engagement with the subject matter.

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Misuse of Words

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Mathematics students and teachers in universities in Pakistan use words, such as mathematician, genius, journal of international repute, pure mathematics, applied mathematics, eminent, etc without realising that these words are used with great care and caution.

This casual use reflects a deeper issue in academic rigor, with students and teachers missing the careful consideration such terms demand globally. These words are not just labels; they signify substantial contributions, exceptional research, or innovation. Using them

carelessly can distort perceptions of excellence and lower academic standards.

This problem may stem from an emphasis on superficial achievements over genuine intellectual development. As noted in the broader context of research in Pakistan, the focus on quantity rather than quality contributes to such misuse. Addressing this issue requires reforms that promote critical thinking, academic integrity, and an appreciation of meaningful scholarship.

Creating a more connected and reflective academic culture is essential. This shift would ensure that academic terms are used thoughtfully, reflecting real accomplishments rather than superficial achievements.

Report on the 24th International Pure Mathematics Conference 2024

Dr Sarwar Saeed
IPMC Secretary

The 24th International Pure Mathematics Conference (IPMC 2024), a premier event in the field of mathematics in Pakistan, took place from August 23rd to 25th, 2024, in Islamabad. This annual conference has become a crucial platform for mathematicians worldwide, fostering the exchange of ideas, presentation of research, and collaboration among scholars. The event adopted a hybrid format, starting with an in-person session at the

Islamabad Club, followed by two days of online sessions, reflecting the post-pandemic evolution of academic gatherings.

The conference opened on August 23rd with a physical session at the Islamabad Club. Emeritus Professor Dr. Qaiser Mushtaq, the convener of the event, delivered an inspiring inaugural address. In his speech, he emphasized the importance of the IPMC series in promoting the growth of pure mathematics and facilitating global cooperation. Dr. Mushtaq underscored the tradition of these conferences in advancing mathematical research by bringing together experts from various countries to explore emerging trends and new frontiers in the discipline.

Following the inaugural address, Dr. Muhammad Sarwar Saeed, Secretary of the organizing committee, presented a detailed report on the history and impact of the IPMC series. His presentation offered insightful statistics, illustrating the growth of the conference over the years, both in terms of participation and the diversity of topics covered. Dr. Saeed highlighted the role of the IPMC as a vital forum for fostering international collaboration and driving progress in mathematical research.



The first day featured five talks on various topics within pure mathematics, attracting over 50 participants from



diverse academic and research institutions. The discussions were lively and productive, reflecting the expertise and enthusiasm of the attendees. The day concluded with a networking lunch at the Banquet Hall of the Islamabad Club, offering participants an opportunity to engage in informal discussions and build professional connections.

The following two days of the conference were conducted online, significantly expanding the scope and accessibility of the event. A total of 105 talks were delivered, including four keynote lectures by renowned mathematicians and 101 short communications by emerging researchers from various countries. The online format enabled broader participation, with speakers from Thailand, Spain, Romania, India, South Africa, Algeria, Iraq, Morocco, China, and Pakistan, underscoring the global relevance and appeal of the IPMC.

The keynote lectures focused on recent developments and research in pure mathematics, sparking engaging discussions and offering participants deep insights into cutting-edge topics. The short communications provided an excellent opportunity for emerging researchers to present their work and receive feedback from senior academics, fostering a vibrant exchange of ideas. The conference concluded with a note of thanks from the



convener, Emeritus Professor Qaiser Mushtaq. He expressed his gratitude to the participants, speakers, and organizers for their valuable contributions to the success of the event. Professor Mushtaq reiterated the importance of such gatherings in promoting the growth and development of mathematics, encouraging continued collaboration and participation in future IPMC events.

In summary, the 24th International Pure Mathematics Conference 2024 was a resounding success, continuing the tradition of excellence established by its predecessors. The hybrid format allowed for broad participation and meaningful exchanges, ensuring that the conference

remains a vital part of the global mathematical community.

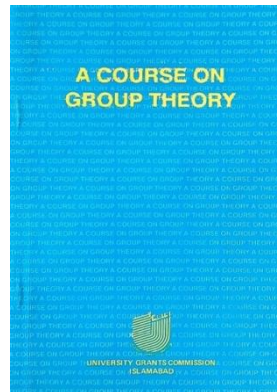
Book Review

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“A Course in Group Theory,” authored by Kaiser Mushtaq and published by the University Grants Commission in 1993, is a concise introduction to group theory tailored for first-year M.Sc. students at Quaid-i-Azam University. Spanning 134 pages, the book is designed to serve both pure and applied mathematics students with a prior understanding of general algebra.

Mushtaq’s aim is not to replace comprehensive treatises on the subject but to provide a structured, systematic introduction. The book stands out for its inclusion of applications of permutation groups and matrix groups, making it particularly useful for students looking to see group theory in action. Notably, specialized areas like Sylow theorems are omitted to maintain focus on foundational concepts.

The proofs are deliberately presented in a condensed form, balancing brevity and clarity. Mushtaq's effort to



keep the text lean without sacrificing depth is commendable. Historical notes interspersed throughout add a layer of intellectual curiosity for readers interested in the development of group theory.

A key strength of the book is its emphasis on problem-solving, with each chapter featuring a substantial number of exercises aimed at fostering mathematical intuition. This practical approach is beneficial for students aspiring to deepen their understanding through practice.

In summary, “A Course in Group Theory” is a valuable resource for M.Sc. students, offering a solid introduction to group theory while emphasizing the importance of problem-solving and applications over sheer volume of content.

Dr. Shahida Bashir of University of Gujrat Receives Awards

Dr. Shahida Bashir, an Associate Professor at the University of Gujrat, Pakistan, has been honoured with two significant awards: the “Quaid-i-Azam Gold Medal Award” and the “Sitara-e-Pakistan Gold Medal Award.” Both awards were approved by the Chief



Secretary of Punjab, Lahore, and the ceremonies took place at Qazafi Stadium, attended by notable figures including the Irrigation Minister and various Vice Chancellors from across the country.

Dr. Bashir has a distinguished academic background, having consistently ranked first in her class and earned numerous merit scholarships throughout her education. She completed her Master's in Mathematics at Quaid-i-Azam University (QAU) under Emeritus Prof. Qaiser Mushtaq, who also awarded her the Shahab-uddin scholarship. Dr. Bashir later pursued an MPhil in ternary semigroups and earned her PhD from Jilin University, China.

With nearly 20 years of teaching and administrative experience, she has significantly contributed to establishing and developing the Mathematics department at the University of Gujrat. Dr. Bashir has guided numerous students at various academic levels and published extensively in reputable international journals. Additionally, a third civil award has been announced, which will be presented by the President of Pakistan.