Obituary – Prof. Riazuddin

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Prof. Riazuddin, an eminent Pakistani scientist, passed away on September 30, 2013. He was born in 1930 in Ludhiana, located in Indian Punjab, in a lower middle class family. During the traumatic experience of Indo-Pak partition which saw the largest mass migration in human history involving nearly 10 million people, his family moved to Pakistan and in the process they lost all their material possession. Instead of mourning the lost past, he decided to pursue fresh dreams in his new homeland Pakistan, with the hope of a better future for himself and his fellow countrymen.

He received his college level education in Pakistani Punjab in the city of Lahore which was considered as a heart of India even before partition, central to the country's artistic, cultural, literary and political life for centuries. Despite his outstanding performance in pre-university exams, Prof. Riazuddin did not pursue a career in engineering which was the usual choice of the majority of talented young students of his time. Instead, he joined the Government College, Lahore, to study for his first degree in physics and mathematics. He also obtained masters degree from the same institution. Though the Government College was always renowned primarily for its excellence in the teaching of English language and literature, Prof. Riazuddin´s studentship at the Government College coincided with the brief return of the famous Pakistani Nobel laureate Prof. Abdus Salam. Although Prof. Salam himself had a hard time adjusting to the harsh realities of life in Pakistan, his presence, teaching and enthusiasm for physics provided an ideal platform for Prof. Riazuddin to take his first steps in his long and exciting journey in the field of physics.

Prof. Salam soon left for the Cambridge University, UK, paving the way for Prof. Riazuddin to follow to obtain his Ph.D. degree there. More exciting times naturally followed. Inspired by a lecture delivered by the Germen/American Nobel prize winner nuclear physicist Prof. Hans Bethe, Prof. Riazuddin came up with his first research problem on the role of dispersion relations in strong interaction physics. He worked on the subatomic particle pion (π) and its charge radius during his Ph.D. thesis. Soon after, he carried out research on a topic which has recently gained renewed interest on the international stage of theoretical and experimental research, namely, chiral symmetry breaking which is responsible for the existence of nearly 98% of the visible matter in the universe.

Subsequent exchange of ideas and discussions with professors Salam, Hans Bethe and an English astronomer Sir Fred Hoyle inspired Prof. Riazuddin to raise himself to the next level of knowledge and zeal for physics. His hard work created opportunities for him to undertake his postdoctoral work and research visits at several distinguished universities of the world, including University of Rochester, USA (1963-65), University of Pennsylvania, USA (1965-66), University of Maryland, USA (1970-72), Daresbury Nuclear Physics Laboratory, UK (1972), Abdus Salam International Centre for Theoretical Physics, Italy (1979-80), VPI and State University Blacksburg, USA (1980-81) and University of Iowa, USA (1981-82).

Prof. Riazuddin published around 165 scholarly research papers in leading journals of the world. His research work has been highly regarded by the physics community as reflected by more than 1900 citations of his published work. His most influential research in physics is known by the name of Kawarabayashi-Suzuki-Riazuddin-Fayyazuddin (KSRF) relation which connects the ρ-π-π coupling to the decay constants of π and ρ mesons and the mass of the ρ particle. He has received the highest number of citations (approximately 650) on one of his articles co-authored by his twin brother and equally eminent scientist Prof. Fayyazuddin. This article uses the mathematical formulation of current algebra and partially conserved axial current to calculate the decay widths of ρ and K* mesons.

Prof. Riazuddin was the founder-director of the Institute of Physics (now the Physics Department) at the University of Islamabad (now the Quaid-i-Azam University). The idea was to establish a research institute of the highest international caliber in Islamabad, staffed with the most talented Pakistani physicists who had returned after receiving their doctoral degree with Prof. Salam. Once the institute was operational, it immediately earned a respectable place among the best international research centres of physics. In the words of Prof. Salam, this institute was the best on the "other side" of Suez, and comparable to the Tata Institute of Fundamental Research in Mumbai, India.

However, as Prof. Robert Aymar, the former director general of the European Organization of Nuclear Research (CERN), wrote in his message of condolence, Prof. Riazuddin's best achievement remains the founding of the National Centre for Physics in Islamabad, Pakistan, for the benefit of several future generations of physicists in the country. We all hope that with capable leadership, administration, organization, productive international collaborations, adequate funding and hiring of exceptionally gifted physicists, this centre can serve as a seed for much needed future scientific prosperity of Pakistan.

Prof. Riazuddin will be missed by his colleagues, friends and family for a long time to come. During a solemn ceremony in his honor a few weeks ago in Islamabad, a large number of messages of condolence, received from all over the world, were read out to the participating audience. Most notable are the names of Professor Sir Chris Llewellyn Smith, Director of Energy Research, Oxford University, UK, Prof. Rolf Heuer, Director General CERN, Switzerland, Prof. John Ellis, currently Clerk Maxwell Professor of Theoretical Physics at King´s College, UK and Prof. Guido Altarelli, Professor of Physics at Rome III University, Italy.

Prof. Riazuddin coauthored several books. He wrote the textbooks entitled "Quantum Mechanics" [1990] and "A Modern Introduction to Particle Physics" [1992, 2000] with Prof. Fayyazuddin. The latter is now recommended and used as a preferred textbook in many prestigious universities around the world. Even more renowned was his first book: "Theory of Weak Interactions in Particle Physics", co-authored with Prof. Robert E. Marshak and Prof. Ciaran P. Ryan. It was very well received by the entire particle physics community. Prof. Jeremy Bernstein was visiting the Institute of Physics at the University of Islamabad when Prof. Riazuddin received the first published version of this book. He naturally offered a copy to Prof. Bernstein who later remarked it had "everything except the phone number of God!"

Prof. Riazuddin was always a brilliant researcher, channelizing his efforts on reaching the highest goals he set for himself. His achievements in his field speak highly of his immense dedication, hard work, concentration, brilliance and discipline that he injected in his focused endeavors all throughout his career. Not only did he manage to become one of the most respected Pakistani physicists on the basis of his personal academic achievements, his impact on nurturing science nationwide is arguably the greatest. Through the formation of highly qualified research personnel, organizations of international conferences of the highest caliber and the establishment of the most prestigious physics institutes in Pakistan, he will always live in the hearts of his fellow colleagues and countrymen. In my opinion, the best way to pay tribute to his endeavors is to follow his example with greater vigor, dedication and hard work.

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