Abdel-Shafy Fahmy Obada

Born

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 Sanbo, Dairout, Assiut, Egypt

Summary
 Abdel-Shafy Obada is an Egyptian mathematician who has made important contributions to quantum field theory.

Biography

Abdel-Shafy Obada's name is sometimes transliterated as "Abada" and it appears in this form in a number of documents. His scientific papers which were written in English, however, all use the form "Obada", so we will use that form throughout this biography. He attended the new Assiut University which began teaching in session 1957-58. There were only 198 students, 12 faculty members and two assistants when it opened. The university was one year old when Obada began studying there in 1958. He graduated in 1962 was a B.Sc. having been awarded Honours in Mathematics. For the next two years he worked at Assiut University as a Demonstrator in the Faculty of Science before being awarded a scholarship to study for a Ph.D. in England.

For his doctoral research, Obada attended the University of Manchester Institute of Science and Technology (UMIST) beginning his studies in 1964. Let us be strictly accurate and explain that when Obada arrived at UMIST it was in fact named the

Manchester College of Technology. It had gained university status in 1956 and was undergoing a period of rapid expansion. It was renamed the University of Manchester Institute of Science and Technology in 1966 while Obada was studying there. His thesis advisor at UMIST was Robin K Bullough.

Robin Bullough (1929-2008) specialised in theoretical physics as a student at the University of Cambridge before studying for a Ph.D. in chemistry at the University of Leeds. He had been appointed to UMIST as a lecturer in the Department of Mathematics in 1960 and was promoted to reader in 1967, the year that Obada completed his Ph.D. in Mathematics. Obada's thesis was entitled *Mathematical treatment of microscopic optics*. After completing his thesis, he was appointed as a Special Demonstrator in the Department of Mathematics at UMIST where he worked for a year and continued to undertake active research, collaborating with several people but especially with Robin Bullough. During this year he published five papers: *Microscopic Theory of the Einstein optical scattering equations* (1968) was co-authored with R K Bullough, B V Thompson (also from the Department of Mathematics at UMIST) and F Hynne (from the H C Orsted Institutet in Copenhagen); and the four papers *Optical propagators and properties of the finite molecular crystal* (1969), *Dielectric constants for the cubic molecular crystal* (1969), *The binding energy of molecular crystals* (1969) and *Longitudinal modes and optical rotation in the finite molecular crystal* (1969) which were all 2-author works by Obada and Bullough.

In 1969 Obada returned to Egypt where he was appointed as a Lecturer in Mathematics in the Faculty of Science of Al-Azhar University in Cairo. This university, which has a long history as a centre of Islamic learning, was founded as a modern university with secular subjects in 1961. It was not long before Obada was back in Manchester, for he spent his first summer vacation, July-August 1970, at the 1st Symposium on Quantum Optics held in Manchester.

Between January and April 1972, Obada was at the International Centre for Theoretical Physics at Trieste, Italy. This Centre had been proposed by the physicist Abdus Salam in 1960 and, in 1963, the Italian government agreed to host such a Centre in Trieste. It opened in 1964 with Abdus Salam as its first director. Its main aim was to:
Foster the growth of advanced studies and research in physical and mathematical sciences, especially in support of excellence in developing countries.

In 1982 Obada became an Associate of the International Centre for Theoretical Physics and continued in this role until 1995, making research visits to the Centre in ten of these fourteen years.

Obada quickly gained an outstanding reputation in Egypt and in the rest of the world, and he was known as the successor to Ali Mostafa Mosharrafa. Let us now look briefly at his career. We noted above that he became a Lecturer in Mathematics at Al-Azhar University in Cairo in 1969. He was promoted to Senior Lecturer in Mathematics at Al-Azhar University in 1974 but left one year later to take up the position of Associate Professor in the Department of Mathematics at King Abdulaziz University in Jeddah, Saudi Arabia. This university had been established in 1967 and took in its first intake of less than one hundred students in the following year. It was in 1974 that the University became a government establishment and efforts were made to expand it into a large modern university. The Faculty of Science was established in that year consisting of departments of mathematics, physics, chemistry, geology and biology. Obada was appointed to the Department of Mathematics and he worked there for four years.

Obada has produced a remarkable number of publications, almost all working with colleagues many being part of the research school he built, but there was a spell after he left Manchester when he published very little. After the 1969 papers which we mentioned above, except for conference contributions he only published one paper in the following eight years, namely *Theory of radiation reaction and atom self-energies: all-order perturbation theory of the generalized non-relativistic Lamb shift* (1974), a joint paper with R K Bullough and P J Caudrey. His move to King Abdulaziz University seems to have prompted him to great publishing activity beginning with a 1977 paper *On the response of a system in a field*, a single author paper which he published in the first volume of the *Bulletin* of the Faculty of Science of King Abdulaziz University.

In 1979 he returned to Al-Azhar University where he was appointed as Professor of Applied Mathematics. He served as Chairmen of the Department of Mathematics in 1982-84. He was also the Secretary to the Board of the Faculty of Science from 1980 to 1984. His output of scientific papers became remarkable and these made fundamental contributions to radiation theory first introduced by Hendrik Lorentz in 1909.

As well as these scientific papers, written in English, Obada was also writing textbooks in Arabic. By 1984 he had three such books in print, namely *Introduction*

to Mathematics for Science and Engineering, *Mathematics in Economics and Management Part I*, and *Mathematics in Economics and Management Part II*. These were all popular and second editions appeared in 1985, 1984 and 1984 respectively. We have mentioned 1984 several times in the above and this is because in that year Obada was appointed as Professor of Mathematics in the Department of Mathematics, Faculty of Education, Umm-Al Qura University, Taif, Saudi Arabia. The College of Education in Mekka had been established in 1962 and this joined the College of Education in Taif in other new departments in the founding of Umm-Al Qura University in 1981. Obada spent five years in the Department of Mathematics of Umm-Al Qura University in Taif and was able to supervise the establishment and building up of the Department of Mathematics. In 1989 he returned to Al-Azhar University in Cairo where he was again Chairman of the Department of Mathematics.

Obada played a large role in the founding of the Egyptian Mathematical Society in 1992. He was elected as the first President of the Egyptian Mathematical Society and has continued in that role. Volume 1 of the *Journal* of the Egyptian Mathematical Society appeared in 1993 with Obada as the Editor-in-Chief. He had continued in this role. As an example of the activities of the Society we note that it ran the International Conference on Mathematics, Trends and Development in December 2017. The conference was held in Dar al-Diyafa, Ain Shams University, Cairo and covered the following topics: Mathematical Physics, Computer Science, Numerical Analysis Methods and Applications, Topology & Geometry and Applications, Algebra and applications, Differential Equation and Applications, Dynamical Systems and Applications, Mathematical Statistics, and Functional Analysis.

In 1994 Obada was awarded a D.Sc. by the University of Manchester.

Although Obada did not visit the International Centre for Theoretical Physics at Trieste after 1995, he did make other visits, for example spending September-October 1996 as a Visiting Professor at McMaster University in Hamilton, Canada. In the following year he spent August-September at Antwerp University in Belgium. He also participated in many conferences.

Among the many awards and prizes given to Obada, we mention his election as a fellow of the Egyptian Academy of Sciences (1995), as a fellow of the British Institute of Physics (2000), as a fellow of the African Academy of Sciences (2001), and as an elected member of the Academy of Arabic Language (2013). He was Vice-President of the African Academy of Sciences from 2004 to 2013. He received the

Egyptian State Prize for Scientific Creativity in Basic Sciences (2004), the State Recognition Prize in Basic Sciences (2005), the Elsevier prize for scientific publications and citations (2008), the Misr El-Kheir Prize for highly cited papers (2011), the Nile Award in Science from the Academy of Scientific Research & Technology (2012), the State Sciences and Arts Medal of the First Order (2014) and the African Union's Kwame Nkrumah Laureate of Basic Science, Technology and Innovation Award (2019).

Professor Obada carries out research studies that deal with the interaction of fields with matter. In the seventies and eighties Obada and co-workers produced papers devoted to reaction field theory that played a fundamental role in the radiation theory since it was first introduced by Lorentz (1909). Professor Obada and his group have published significant papers in the fields of quantum optics, quantum information, and quantum computation.

Finally, we note that:

Obada-Prize is an international award, endowed by the Natural Sciences Publishing. Initiated as a recognition of his excellence Professor Abdel-Shafy Obada. The Obada-Prize recognizes and encourages innovative and interdisciplinary research that cuts across traditional boundaries and paradigms. It aims to foster universal values of excellence, creativity, justice, democracy, and progress and to promote the scientific, technological and humanistic achievements that advance and improve our world.