IN MEMORIAM

Maha Ashour-Abdalla
Professor of Physics and Astronomy
UC Los Angeles
1943-2016

Maha Ashour-Abdalla, longtime Professor in the UCLA Department of Physics and Astronomy passed away on the evening of May 1, 2016 at the age of 72. Maha was born in Alexandria, Egypt. After completing her B.Sc. at Alexandria University in 1964, she received a scholarship to pursue graduate studies under the direction of Professor Jim Dungey at Imperial College in London where she was awarded her Ph.D. in 1971. She then became a research scientist at the Centre National d'Etudes des Telecommunications in France, before moving to Los Angeles where she was a geophysics researcher in the UCLA Institute of Geophysics and Planetary Physics from 1976-1985. Maha was appointed as a Professor in the UCLA Department of Physics and Astronomy in 1985. She was elected a Fellow of both the American Physical Society (1986) and the American Geophysical Union (1993).

Maha founded the UCLA Space Plasma Simulation Group (SPSG), which was one of the first groups in the country dedicated to using plasma physics simulations for magnetospheric physics in close coordination with spacecraft data. The UCLA group, under her leadership developed one of the first global magnetohydrodynamic (MHD) simulations of the solar wind, magnetosphere and ionosphere system. She led the development of the large-scale kinetic simulation technique in which the trajectories of millions of ions or electrons are traced in the time dependent magnetic and electric fields derived from the MHD simulations. Over the years, Maha was principal investigator on numerous grants from NASA and NSF.

Recently, she was the UCLA principal investigator of an Interdisciplinary Scientist grant for NASA's Magnetospheric Multiscale (MMS) mission, a four spacecraft mission launched in 2015 to study the physics of magnetic reconnection, one of the most critical problems in solar and space physics. As principal investigator for a NASA Heliophysics Grand Challenges Research theory grant, she led the SPSG group in the development of a revolutionary new simulation approach in which the MHD simulations are used to set the initial and boundary conditions for a large-scale particle-in-cell (PIC) simulation. The new approach is being used to study the microphysics of reconnection for the MMS mission. Maha authored or coauthored more than 270 research papers in peer-reviewed journals and was invited to give over 200 talks at meetings and conferences worldwide. She served on numerous NAS, NSF and NASA advisory panels including the NAS Committee on Solar Terrestrial Research, the NSF Advisory Panel for Advanced Scientific Computing and the NASA Space Physics Advisory Subcommittee.

In an effort to share her passion for space plasma research with the next generation of young space scientists, Maha initiated the International School for Space Simulations (ISSS) in 1982 along with colleagues from Japan (H. Matsumoto and T. Sato) and France (R. Gendrin). For more than 30 years the school has educated generations of young scientists in numerical simulation techniques. The first school, ISSS-1, was held in Kyoto Japan in 1982, with succeeding ISSS held every two to three years, rotating between Europe, North America and Asia. She helped to organize the most recent ISSS-12, which was convened in Prague in 2015.

Teaching at UCLA was another of Maha's passions. Her undergraduate physics courses were very popular with students and often filled past normal capacity. Maha spent long hours helping her students and saw many of them advance to graduate and medical schools. Her upper division plasma physics and numerical analysis courses were also very popular. Many of her students were inspired to attend ISSS, with many going on to careers in science. For her devotion and excellence in teaching, the UCLA chapter of Theta Chi awarded her its Educator Appreciation Award. From 1991-2015 the Department of Physics and Astronomy awarded Maha 11 Outstanding Teacher Awards. The ultimate appreciation of her teaching abilities was shown in January 2000 when she was named one of the Top 20 UCLA Professors of the 20th Century by UCLA Today. During her tenure at UCLA, Maha also supervised eleven Ph.D. graduates from the Department of Physics and Astronomy, as well as numerous undergraduate researchers.

Maha had a keen interest in developing educational programs for students (K-12 and college) that utilized innovative digital technologies, sometimes partnering with major companies such as Hitachi, Sun Microsystems and McGraw-Hill. In 1999 she founded and became the director of the UCLA Center for Digital Innovation (CDI) and oversaw the development of several educational software products including chemistry (CyberChem) and physics (MEPI), Space Discovery, Smart School (K-12 curriculum development), Wattsville (energy concepts) and IMED (UCLA distance learning). An early focus of CDI was the launching of the Transpacific Interactive Distance Education (TIDE) program, which allowed students at UCLA and at Kyoto University in Japan to participate in face-to-face collaborative lectures. During the twelve years Maha directed CDI, the center produced nine web-based programs in high school science and math for

the University of California College Prep Initiative, a preparation course for the California High School Exit Exam (CAHSEE), and a certified “International Computing Driving License” course. For her efforts in the area of digital education, she received the Sun Microsystems “Sun Customer Leadership Award” in recognition of outstanding efforts in deploying the latest technologies in the field of distance learning (1998), the Asian Multimedia Forum, U.S. Regional Award for courseware development (1999) and the CENIC Innovation in Networking 2008 Award for Educational Applications related to the development of CAHSEE.

Further honors and awards she received include:

- The Japan Society for the Promotion of Science (JSPS) Research Fellowship (1984)
- The UCLA Woman of Science Award (1986)
- The NASA Group Achievement Award for Polar MFE Team, Global Geospace Science (GGS) Investigations Team (1998)
- The NASA Group Achievement Award for Theory Investigation Team/UCLA Global Geospace Science (GGS) Investigations Team (1998)
- The Department of the Army “Outstanding Civilian Service Medal” (2004)
- The European Space Agency award for her outstanding contribution to Cluster’s exploration of Geospace (2005)

Maha Ashour-Abdalla was a tireless worker and prolific researcher in the field of space plasma physics. Until very recently she was actively working on research and teaching. Maha was charismatic, engaging, extremely loyal, and those who met her quickly came to appreciate the force of her personality. Maha was truly a one of a kind individual who left an indelible impression on everyone she met. She will be greatly missed. Maha is survived by her husband Dr. Mohamed Abdalla and her daughter Kenz Abdalla.