PERSONAL PROFILE: WILLIAM M. TANG

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William M. Tang is the Director of the Fusion Simulation Program at the Princeton Plasma Physics Laboratory (PPPL) -- the U. S. Department of Energy (DoE) national laboratory for fusion research -- and Lecturer with Rank & Title of Professor in the Department of Astrophysical Sciences at Princeton University. He also serves on the Executive Board for the Princeton Institute for Computational Science and Engineering (PICSciE) which he helped establish at Princeton University during his 6-years tenure as Associate Director to stimulate progress in innovative computational science via interdisciplinary alliances involving computer science, applied mathematics, and prominent application areas in the physical sciences and engineering disciplines. He is a Fellow of the American Physical Society, and in October, 2005, he received the Chinese Institute of Engineers-USA (CIE-USA) Distinguished Achievement Award. The CIE-USA, which is the oldest and most widely recognized Chinese-American professional society in North America, honored him "for his outstanding leadership in fusion research and contributions to fundamentals of plasma science."

Dr. Tang was the Chief Scientist at PPPL from 1997 until 2009 and also played a national leadership role in the formulation and development of the DoE's multi-disciplinary program in advanced scientific computing applications, SciDAC (Scientific Discovery through Advanced Computing). After receiving a Ph.D. in Physics from the University of California, Davis in 1972 with his dissertation research carried out at the Lawrence Livermore National Laboratory, he advanced to the Principal Research Physicist rank at PPPL and Lecturer with Rank & Title of Professor in the Department of Astrophysical Sciences by 1979 and also became a Fellow of the American Physical Society at that time. He served as Head of the PPPL Theory Department, generally recognized as the premier plasma science theory group in the world, from 1992 through 2004 – a period during which complementary high-performance computing research became a prominent part of the program. More recently, he chaired the major DoE-SC meeting on "Scientific Grand Challenges in Fusion Energy Sciences and the Role of Computing at the Extreme Scale" (Spring, 2009) and was appointed by Energy Secretary Steven Chu to DoE's Advanced Scientific Computing Advisory Committee (ASCAC) for 2009-2012. He is currently will the PI (Principal Investigator) leading a national multi-disciplinary, multi-institutional team of plasma scientists, computer scientists, and applied mathematicians from 6 national laboratories, 2 private industry companies, and 9 universities to carry out the 2-year program definition and planning of DoE's Fusion Simulation Program (FSP) to be completed in July of 2011.

In research activities he is internationally recognized for his leading role in developing the requisite mathematical formalism as well as the associated computational applications dealing with electromagnetic kinetic plasma behavior in complex geometries. He has over 200 publications – with more than 130 peer-reviewed papers in Science, Phys. Rev. Letters, Phys. Fluids/Plasmas, Nuclear Fusion, etc. and an "h-index" or "impact factor" of 42 on the Web of Science, including over 5300 total citations. He has guided the development and application of the most widely recognized codes for realistically simulating complex transport dynamics driven by microturbulence in plasmas and is currently the Principal Investigator of a multi-institutional DoE INCITE Project on "High Resolution Global Simulations of Plasma Microturbulence." The INCITE (Innovative and Novel Computational Impact on Theory and Experiment) Program promotes cutting-edge research that can only be conducted with state-of-the-art super-computers. Prof. Tang has also been a key contributor to teaching and research training in Princeton University's Department of Astrophysical Sciences for over 30 years and has supervised numerous successful Ph.D. students, who have gone on to highly productive scientific careers, including recipients of the prestigious U.S. Presidential Early Career Award for Scientists and Engineers (PECASE) in 2000 and 2005.