



Feng Hsu, bio & publications

Feng Hsu, Ph.D



Dr. **Feng Hsu** is a renowned US expert with over 20 years of experiences in the field of Risk and Safety assessment and mission assurance management for complex engineering systems, such as nuclear power plant system, space launch vehicle systems, solid rocket booster & interplanetary exploration spacecrafts as well as air or ground traffic control systems for civil aviation.

As a restless space activist, Feng is a member of the Space Renaissance International Executive Committee.

Formerly an engineering researcher at world renowned Brookhaven National Laboratory (BNL), Dept. of Advanced Technology, he has worked extensively on reliability, Probabilistic Risk Assessment (PRA) and management theory and methodology research for nuclear reactor system and space launch vehicle systems since the 1980s.

He then became Sr. Staff Engineer/Scientist and joined NASA's SAIC team in the Space Shuttle and Exploration Analysis Department at Johnson Space Center in Houston Texas since 2000. He has been a lead engineering analyst and project manager working as technical authority in the Space Center on NASA's key program areas, such as Probabilistic Risk Assessment (PRA), Safety and Mission Assurance (SMA) for the Space Shuttle Program (SSP), International Space Station (ISS) as well as the Risk-based design assessment for the new generation space launch & crew exploration vehicle (CEV/CLV) systems etc. Feng was a leading NASA engineer working on frontier space missions at NASA GSFC, and he has over 70 publications, including Journal articles, NUREG/CRs, BNL and NASA technical reports as documented for US NRC (Nuclear Regulatory Commission), US DOE (Department of Energy), US FAA (Federal Aviation Administration) and NASA (National Aeronautics and Space Administration) etc. Besides being referee for several international journals, Feng is a member of the technical committee of IEEE SMC, co-chair of the technical committee on system safety and security, and has regularly chaired technical sessions in various professional and international academic conferences.

His major professional strengths, technical capabilities and interest of academic research include: (1) Advanced methodologies for Risk Assessment and Management applications for large & complex engineering systems, i.e., nuclear, space, off-shore oil exploration, chemical and mining industry, aviation and high speed railroad traffic safety & risk-based regulatory technologies. (2) Aging & life-extension and degradation modeling for safety risk and governmental regulatory analysis of industrial facilities and hardware equipments of any paramount financial and national importance, using dynamic/living PRA models, system reliability allocation & optimization techniques and failure data statistics. (3) Development of innovative techniques & methods for hazard assessment and risk management for prevention of industrial, financial and national catastrophes and minimization of consequences in lieu of occurrences of such severe accidents and natural disasters. (4) Risk-benefit modeling for strategic planning and decision making of high-valued national projects (energy, defense, public security, social-economical and industrial investment etc.) based on Monte Carlo simulation, risk based performance monitoring, risk-informed multi-objective & multi-criteria decision making and cost-benefit trade-off studies as well as Markov modeling approaches.

Feng earned his undergraduate degree in Applied math at Chungking University in Sichuan and left China over 20 years ago for graduate studies at MSU in the USA and earned MS in Operations Research and Statistics, Ph.D. in Engineering Science. He has won numerous research and service awards from BNL, SAIC and NASA during many years of his outstanding contribution and accomplishment in many fields. His major professional and academic honors include: Senior member of Aerospace Technology Working Group (ATWG). Sr. Advisory of the SEDA (Space & Earth Development Alliance) Institute. Member of ANS (American Nuclear Society), AIAA (American Institute of Aeronautics and Astronautics), IEEE, ISSAT (International Society of Science & Applied Technologies) and SRA (International Society for Risk Analysis). Board of director member (96-98) of ISSAT (International Society of Science & Applied Technologies). Referees (Peer Reviewer) for International Journal of Reliability and Quality Control; International Journal of Reliability Engineering & System Safety; International Journal of Risk Analysis. Coauthor of the book *Beyond Earth – The Future of Humans in Space*, Apogee Books, 2006. Principle author of major reports of the NASA PRA study for the Space Shuttle STS systems. NASA/SAIC SR&QA recognition award, July 2002, significant contribution for Shuttle PRA. NASA/SAIC SR&QA peer recognition award, March 2001, key contribution for SPRA MLD. Brookhaven National Laboratory service award, August 1999 for outstanding work performance. US DOE honor for NIAS technique & software development, US National Energy Software Center. Argon National Laboratory, Chicago, Jan., 1994. Brookhaven National Laboratory, ETD seminar award, April, 1992 (Risk-based Display indicator Technology). Brookhaven National Laboratory, ETD seminar award, Oct., 1990 (Degradation modeling &

Applications).

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