Lester Ingber--deleted

Subjects: Physics, Applied | Others | Physics, Mathematical

Contributor: Lester Ingber

Prof. Lester Ingber has published over 100 papers and books in theoretical physics, neuroscience, finance, optimization, combat analysis, karate, and education. As CEO of Physical Studies Institute LLC (PSI) in Ashland OR he develops and consults on projects documented in the https://www.ingber.com/ archive.

Prof. Ingber received: his diploma from Brooklyn Technical High School in 1958; his B.S. in physics from Caltech in 1962; his Ph.D. in theoretical nuclear physics from UC San Diego in 1967 while studying at the Niels Bohr Institute in Copenhagen and consulting at RAND in Santa Monica CA.

Prof. Ingber has held positions in academia, government and industry: National Science Foundation Postdoctoral Fellow at UC Berkeley and UC Los Angeles; Assistant Professor in physics at SUNY at Stony Brook; Research Physicist in the Physics department and in the Institute for Pure and Applied Physical Sciences at UC San Diego; Research Associate at UC San Diego in the Music department; twice Senior Research Associate of the National Research Council of the National Academy of Sciences; Professor of Physics at the Naval Postgraduate School in Monterey CA and the US Army Concepts Analysis Agency in Bethesda MD; Research Professor of Mathematics at The George Washington University in DC; Director of Research and Development at trading firm DRW Trading in Chicago IL and hedge fund DUNN Capital Management in Stuart FL; Editor-in-Chief at Research Publisher for: Current Progress Journal (timely topics in science), Graduate Journal of Research, and Undergraduate Journal of Research, and associated e-conferences for these three journals; Partner in Pion Capital, a hedge-fund partnership of Caltech alumni; PI of a NSF.gov XSEDE.org physics project.

combat finance intelligence karate neocortex nonlinear nuclear optimization options physics risk statistical stochastic trading

1. SCIENTIFIC PURSUITS

Lester Ingber has published over 100 papers and books in the categories of: theoretical physics, neuroscience, finance, optimization, combat analysis, karate, and education. Through Physical Studies Institute LLC (PSI) he develops and consults on projects documented in the https://www.ingber.com/ archive.

1.1. NUCLEAR PHYSICS

From 1965-1972 he published in atomic, nuclear, astro-, and elementary particle physics. His major work was to develop a nucleon-nucleon interaction described by exchanged mesons, and to apply this interaction to calculate properties of nucleon-nucleon scattering, the deuteron, nuclear matter, and neutron stars. In 1983-1986 he used modern methods of nonlinear functional analysis developed in the late 1970's to discover contributions induced by velocity-dependent potentials to nuclear matter binding energies.

1.2. NEUROSCIENCE

Since 1978 he has developed a statistical mechanics of neocortical interactions applicable to a broad range of spatial and temporal scales, using modern methods of nonlinear nonequilibrium statistical mechanics of neocortical interactions (SMNI) to calculate brain `observables', e.g., short-term memory and EEG analyses. His 1983 *Physical Review* paper was the first paper accepted on the brain in this premier physics journal. From 2013 he has used XSEDE.org resources, extending the range of SMNI from EEG to molecular processes, and developing quantum algorithms that have broad applications ranging from computational neuroscience to computational physics to blockchains.

1.3. FINANCE

Since 1980 he has developed a statistical mechanics approach to financial markets, e.g., to multivariable term structure and stochastic markets. His 1990 *Physical Review* paper was the first paper accepted on finance in this premier physics journal. From 1997-2001, as Director R&D at DRW Trading in Chicago, he led a team developing multi-factor nonlinear stochastic models of markets. From 2002-2003 he was Director R&D at DUNN Capital Management in Stuart FL, developing risk-management algorithms. From 2011-2013 he was a Partner in Pion Capital, a hedge-fund partnership of Caltech alumni.

1.4. OPTIMIZATION/MODELING

Since 1987 he has developed Adaptive Simulated Annealing (ASA), one of the most powerful optimization algorithms for nonlinear and stochastic systems, working with thousands of users. Other codes have been developed to model multivariate nonlinear stochastic systems. In 1994-1995, as principal investigator (PI) of an NSF Supercomputer grant, he ported his ASA and PATHINT codes onto parallel supercomputers.

1.5. COMBAT SIMULATION

From 1986-1989, as Professor of Physics at the Naval Postgraduate School and PI of an Army contract, he applied these methods of mathematical physics, leading a team of scientists and officers to develop mathematical comparisons of Janus computer combat simulations with exercise data from the National Training Center (NTC), developing a testable theory of combat successfully baselined to empirical data.

2. EDUCATION AND POSITIONS

He received: his diploma from Brooklyn Technical High School in 1958; his B.S. in physics from Caltech in 1962; his Ph.D. in theoretical nuclear physics from UC San Diego in 1967, having studied at the Niels Bohr Institute in 1964, and having consulted at RAND in 1965-1966. He was a National Science Foundation Postdoctoral Fellow at UC Berkeley in 1967-1968 and at UC Los Angeles in 1968-1969, an Assistant Professor in physics at SUNY at Stony Brook from 1969-1970, and a research physicist in the Physics department and in the Institute for Pure and Applied Physical Sciences (IPAPS) at UC San Diego from 1970-1972.

From 1970-1986 he was President of Physical Studies Institute (PSI), a nonprofit corporation he founded in 1970, which was an agency account in IPAPS from 1980-1986. From 1970-1972 he developed teaching methodologies for academics and fine arts, instructing in and administrating a six-course program through UC San Diego Extension. From 1972-1978, though PSI, he founded, funded, and instructed in an experimental alternative high school offering 30+ courses in academics, fine arts, and physical disciplines. He was a Research Associate at UC San Diego in the Music department from 1972-1974 and in IPAPS from 1980-1986.

He was awarded a Senior Research Associateship for 1985-1986 by the National Research Council (NRC) of the National Academy of Sciences, taken at the Naval Postgraduate School (NPS) in Monterey, CA. From 1986-1989 he was Professor of Physics at NPS at a GS-15 Step 10 equivalent position. In March 1988 he was officially offered a Senior Executive Service (SES) appointment as Assistant Director of the Joint Tactical C3 Agency (JTC3A); he declined to complete his projects. From February through June 1989 he was on extended temporary duty at US Army Concepts Analysis Agency (CAA) in Bethesda, MD. In 1989 He won a second NRC Senior Research Associateship, taken at the Naval Ocean Systems Center (NOSC) in San Diego. From 1989-1990 he was Research Professor of Mathematics at The George Washington University (GWU), D.C.

From 1989-1997, through Physical Studies Institute (PSI), he consulted on projects in his fields of expertise. From 1997-2001 he was Director of Research and Development at DRW Trading, a trading firm in Chicago, IL. From 2002-2003 he was Director R&D at DUNN Capital Management in Stuart FL.

Through PSI, he conducts research in selected interdisciplinary projects. In 2012 he was Editor-in-Chief at Research Publisher in Santa Clara, CA for three journals and associated e-conferences. From 2011-2013 he was a Partner in Pion Capital, a hedge-fund partnership of Caltech alumni. From 2013 he has been a PI of NSF XSEDE.org physics projects.

3. OTHER PURSUITS

Lester Ingber is a physicist with interdisciplinary expertise and interests importance-sampling life.

3.1. KARATE

From 1958-1988 he founded and instructed karate classes at: Caltech, UC Berkeley, UC Los Angeles, SU New York at Stony Brook, UC San Diego, PSI, and NPS. He has developed and published in several textbooks techniques promoting the learning of attentional skills in parallel with a physics approach to the learning of traditional physical skills. He received his black belt in karate in 1961 and became the first Westerner to receive the Instructor's degree from the Japan Karate Association (JKA) in 1968. Now he is an 8th Dan black belt. From 1989-1991 he was Director of Scientific Studies of the American JKA Karate Associations (AJKA). From 2008-2009 he was an 8th Dan Officer of The International Alliance for Shotokan Karate (IASK).

3.2. MARRIED

Since 1976 he and his spouse Louise Ingber have been partners in several projects, including running a ballet company and karate studio (1976-1985). He helps with cleanup for her chocolate and pastry business [https://www.creekhousechocolates.com].

Since 1976 he and his spouse Louise Ingber have been partners in several projects, ranging from running a ballet company and karate studio (1976-1985), Her ballet career spanned: Principal Ballerina with Ballet Pacifica, Laguna Beach, CA; Founder and Director, Conservatory of Ballet Arts & Co., Solana Beach, CA; Master Teacher, Hidden Valley Music Seminars, Carmel Valley, CA; guest ballerina, guest teacher/choreographer, and author.

She received professional culinary and baking degrees from the Cooking and Hospitality Institute of Chicago (CHIC), a Le Cordon Bleu Paris school. After obtaining her culinary degree she was a Sous Chef, and then after obtaining her baking degree she was a Pastry Chef with the W Hotel Chicago.