2010

The 3rd International Symposium on Nonlinear Dynamics

Sept. 25-28, 2010, Shanghai , China

Program

The 3rd International Symposium on Nonlinear Dynamics (ISND2010)

Sept. 25-28, 2010
Shanghai, China

In celebration of Prof. M.S. El Naschie's 65th birthday

Dedicated to Prof. M.S. El Naschie for his contributions to incorporate nonlinear dynamics, chaos and fractals in quantum physics and to Prof. C.D. Yang for his original contribution of using complex spacetime in quantum mechanics.

Welcome Address

Ji-Huan He /Chairman of 2010 ISND

Dear distinguished gathering, ladies and gentlemen

I am immensely pleased and honored to welcome you to Shanghai, which has been developing very fast, and will be strongly impressed on your memory.

2010 ISND is organized as a preeminent event for nonlinear science community and other science communities as well. It is a great pleasure and honor for Donghua University to host this very important conference.

It provides me the greatest honor and pleasure to address you at this very important event, the 2010 ISND conference which is intended to bring together researchers from the industry and academia to discuss theory and applications of deterministic chaos and fractal geometry across natural as well as man-made sciences.

We have come a long way since our major conferences of 2005 and 2007. This time we have again a very special reason to mark E-infinity theory as a special topic in this conference. There are various more than compelling reasons to do that. We may mention in particular the experimental discovery and verification of the golden mean in quantum mechanics by the Helmholtz Centre in Germany in cooperation with the University of Oxford. This hard to overestimate experimental fact is exactly what was predicted by E-infinity theory almost two decades ago. With this experimental confirmation this matter and any genuine controversy are largely settled. Any objective researcher must from now on take it as an indisputable fact that nonlinear dynamics and chaos which manifest themselves geometrically as fractals and Cantor sets provide the missing link between the quantum and the non-quantum relativistic world.

Our group has worked with considerable dedication on this fundamental cutting edge research and made some of the most important contributions to this theory. In particular we were able to establish in the clearest of forms the relationship between the transfinite theory of dimensions and fractals as well as the physical meaning of the empty set of the Menger-Urysohn theory. The golden ratio in this context is of course the finger print of the KAM theorem as well as being the Hausdorff dimension of a Mauldin-Williams random triadic Cantor set. It is also the backbone of A. Connes dimensional function of his noncommutative geometry with its well known relation to quantum mechanics. All of that will be explained in detail at this conference in various invited and contributed papers. For this reason we are extremely happy that the Egyptian engineering scientist and theoretical physicist, Professor M.S. El Naschie accepted our invitation to come to Shanghai especially from London despite his health condition to deliver the opening lecture of this conference.

Unification theory has been working for many years, but rare focus was put on the unification of Newton Mechanics and Quantum mechanics: Newton's mechanics is deterministic; while Quantum mechanics is probabilistic, they are two sides of a contradiction, no one considered to unify the two contrary theories. Fortunately, we have now ancient Chinese philosophy of Tai Chi. According to this philosophy, Prof. C.D. Yang proposed a new space called the complex space, and his complex mechanics has been caught much attention, and I should emphasize that C.D.Yang's law is one of the greatest nature law. From C.D. Yang's complex space, quantum mechanics can be simply derived the complex-extended Newtonian mechanics. Great classics when revisited in the light of modern physics , especially nonlinear dynamics may reveal hidden pearls. For this reason we are extremely happy that Professor C.D. Yang accepted our invitation to come to Shanghai to deliver the opening lecture of this conference and introduce the complex mechanics.

It is not unusual for any revolutionary idea to provoke a counter-revolutionary reaction. E-infinity is a revolutionary idea building upon many other revolutionary ideas like M. Feigenbaum's universalities, B. Mandelbrot's fractals and A. Connes' noncommutative geometry. However these are all scientific revolutions and not political, social revolutions. Opposing such scientific revolutions should only take the form of scientific debates and arguments. To explain what I mean

let me recount to you what Werner Heisenberg lamented about the attacks by many notable scientists including Nobel laureates in physics on A. Einstein calling his theory of relativity, Semitic non-aryan physics. Heisenberg said he was extremely saddened by the fact that the attacks were not scientific attacks but politically motivated, dishonest attacks. Later on when a book published with the title 'A hundred scientists against Einstein', the great man remarked: "Why one hundred? If I were wrong, one would be sufficient."

We hope that this conference will allow the rest of our scientific community to realize the new and powerful possibilities which nonlinear dynamics, deterministic chaos and fractal geometry provides to not only round up our picture of nature and reality and resolve long outstanding quantum paradoxes such as the two-slit experiment with quantum particles and the wave collapses, but will also give us a handle on useful applications in nano and other new technologies.

I sincerely hope you will find the conference enjoyable and the discussions illuminating and useful. I hope also that you will foster new scientific friendships, helping you in your research.

Hereby, I should express my thanks to Donghua University for their sponsorship of this conference.

It is my greatest honor to invite Prof. M.S. El Naschie and Dr. C.D. Yang to give our audience important plenary lectures, which present an overview of the current status of their fields with a speculative outlook on what are to come out in the future, making the conference extremely accessible to a broad audience.

I also appreciate very much all reviewers for their time and help and mini-symposium organizers, without their help, the success of the conference will be impossible.

As pointed out by Einstein, "*The most incomprehensible thing about the world is that it is at all comprehensible*", but how do we fully understand incomprehensible things? This conference provides various useful clues. I can ensure you that it will be a mathematically enriching and socially exciting event.