



Chaos and quantum gravity



From the chaos theory to new speculations on quantum mechanics

20 may 2013

From the **chaos theory** to the formulation of the theory of **quantum gravity**, including a revision of **quantum mechanics**: these will be the themes addressed at **SISSA** on the occasion of the next **Sciama Lecture**, featuring British meteorologist **Tim Palmer**.

Wednesday 22nd May
at 5.30pm, Main Lecture Hall
SISSA, via Bonomea 265

A butterfly flapping its wings in Japan may provoke a hurricane on the other side of the world. This, in short, is the chaos theory, according to which minor variations of the initial conditions may cause huge differences when a system evolves. And such differences, according to the experts, are complex to calculate. Edward Lorenz, however, in 1963 found out that certain systems show cyclical characteristics in their evolution and tend towards a definite "set of



solutions”, that is, the “Lorenz attractor”, which has a fractal dimension (fractals are self-similar structures that repeat themselves at different scales, *ad infinitum*).

On Wednesday 22nd May, on the occasion of the yearly appointment with the **Sciama Lecture**, Tim Palmer, a physicist of the University of Oxford, starting from the chaos theory will illustrate how certain aspects are applicable to various physics fields. In particular, Palmer will explain how these concepts, applied to the study of the Universe, may have deep implications for the research towards a quantum theory of gravity, considered by many as a Holy Grail of physics. Palmer also proposes to reconsider the foundations of quantum mechanics, an operation many physicists may consider rather “daring”.

Timothy Palmer is a British meteorologist, a professor at the University of Oxford and a scientist of the *European Centre for Medium-Range Weather Forecasts*. Palmer is also Chairman of the *Royal Meteorological Society*.

The conference is open to the public and will be held in English.

More in detail...

The *Sciama Lectures* are a conference series dedicated to the memory of Dennis Sciama, a physicist who had a key role in the development of modern cosmology and of relativistic astrophysics both through his own work and that of a great number of his students and colleagues that have become leading figures in research. Sciama also headed up the astrophysics department at SISSA from 1982 to 1998. Before arriving in Trieste he had directed similar departments, first in Cambridge and then in Oxford, in the United Kingdom.

The conferences dedicated to Sciama (which are held twice a year in Trieste and Oxford) are open the public and throughout the years have featured some of the world’s greatest experts in the field of physics research such as Roger Penrose, George Ellis, Stephen Hawking, John Barrow, Julian Barbour, Marek Abramowicz, Kip Thorne and, last year, Martin Rees.

Contacts:

Communication Office:

pressroom@sisa.it

Tel: (+39) 040 3787557 | (+39) 340-5473118, (+39) 333-5275592

via Bonomea, 265

34136 Trieste

For further information on SISSA: www.sissa.it