

ANNOUNCEMENT
Tuesday June 22, 2004

**The French Academy of Sciences has awarded its major Prize,
the « Grande Médaille »
for the year 2004, to the American physicist Professor David J. GROSS**

The contributions of Professor David Gross to quantum field theory and particle physics, in particular in the foundations of quantum chromodynamics, have had a worldwide impact. More recently he has made essential contributions to superstring theory, a theory (still in progress) of all the basic interactions.

His teaching of theoretical physics at Princeton University (1966-1997) has had a deep influence on numerous students, several of them being now among the most famous theorists themselves. In 1997, Pr. David Gross became the Director of the Kavli Institute of Theoretical Physics at Santa Barbara, a world leading multidisciplinary center for science.

Pr David Gross is one of the pioneers who has established, after more than fifty years of unsuccessful attempts, the theory of strong nuclear forces, known nowadays as « quantum chromodynamics ». The theory started with a deep analysis of the experimental observations which had revealed an internal structure inside the proton, made of constituents known as quarks, which are both impossible to extract from the proton and yet essentially free from each other at short distance. David Gross showed that a theory based on a local symmetry, involving an internal degree of freedom of the quarks named color, had indeed the property of weak interaction between quarks at short distance. He also proved that it was the only quantum field theory enjoying this property. Quantum chromodynamics was born and all the detailed calculations so far have passed with success the test of experiment. This is now part of the standard model of electromagnetic weak and strong interactions between elementary particles, whose success is both remarkable ...and distressing since theorists now expect, for a number of reasons, new physics at even shorter distances.

Since its establishment in 1997 the « Grande Médaille » of the « Académie des sciences de l'Institut de France » is awarded annually to a scientist who has made major contributions to science, as well through the originality and impact of his research as well as in his international influence and the establishment of a school of thought. The medal is attributed alternatively in the disciplines constitutive of the two divisions of the Academy: 1st division (mathematical and physical sciences and their applications) on even years, 2nd division (chemical, natural, biological and medical sciences and their applications) on odd years.

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