



2008 International Solvay Chair in Physics

Inaugural Lecture

Friday 3 October 2008 at 4:00 pm in the Forum A

David Gross

(KAVLI Institute, Santa Barbara, USA)

“The Coming Revolutions in Fundamental Physics”

“I review the present state of knowledge in elementary particle physics and the questions that we are currently addressing. I discuss the experimental revolutions that might occur at the Large Hadron Collider, soon to be finished at CERN. I shall also review the state of string theory. The necessity to go beyond the standard model of particle physics and to understand quantum gravity has led to this ambitious attempt to unify all the forces of nature and all forms of matter as different vibrations of a string-like object. But string theory is still in a pre-revolutionary stage. Although remarkable progress has been achieved in the last decade we still lack a fundamental understanding of the theory. Many string theorists suspect that a profound conceptual change in our concept of space and time will be required for the final formulation of string theory.”



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Lectures

"QCD and the large N limit"

Monday 6 October
4:00 pm to 6:00 pm
Solvay room

Lecture 1: *"History of QCD."*



Tuesday 7 October
4:00 pm to 6:00 pm
Solvay room

Lecture 2: *"Introduction to large N , Thermodynamics, Spin Models, Gross-Neveu Model."*

Wednesday 8 October
4:00 pm to 6:00 pm
Solvay room

Lecture 3: *“Matrix Models: The planar expansion, Matrix Models, Double scaling and 2D gravity, Applications to QCD.”*



Thursday 9 October
4:00 pm to 6:00 pm
Solvay room

Lecture 4: *“String Theory: AdS/CFT, Matrix theory, QCD strings.”*