



Frank Wilczek

2004 NOBEL PRIZE IN PHYSICS
Massachusetts Institute of Technology
Cambridge, Massachusetts, USA

Anticipating a new Golden Age

Fundamental physics is poised to take a great leap forward in coming years. An extraordinary instrument — the Large Hadron Collider, or LHC is just coming into operation. Future generations may come to view the LHC as the defining symbol of our culture, analogous our to the Pyramids of ancient Egypt; but it's much better! It will enable us to see whether some gorgeous ideas about the ultimate laws of physics describe reality correctly.

I'll start out by describing what the LHC is, viewed simply as an awesome physical object and engineering project. Then I'll explain why it has to be that way, to do the job it's meant to do. Then, in the bulk of the talk, I'll discuss my vision for the next level of unification in physics. That vision suggests specific new phenomena that should become visible using the LHC. So there will be, at last, a crucial test for these ambitious ideas.

In a multimedia presentation including spectacular images, some amazing ideas, and a few jokes, I'll demonstrate why this is an especially exciting time to be a physicist.

BIO

Frank Wilczek was born in Mineola, New York (USA). He graduated in mathematics in 1970 and received his PhD in physics from Princeton University. He later joined the faculty at the Institute for Advanced Study at Princeton and the Institute for Theoretical Physics at the University of California, Santa Barbara. He currently is Herman Feshbach Professor of Physics at the Massachusetts Institute of Technology's Theoretical Physics Center. Prof. Wilczek was awarded the Lorentz Medal in 2002 and the High Energy and Particle Physics Prize in 2003 granted by the European Physical Society. He was co-recipient of the 2004 Nobel Prize in Physics, together with David J. Gross and H. David Politzer, for the discovery of asymptotic freedom in the theory of the strong interaction, a fundamental breakthrough which allowed for the development of quantum chromodynamics. His findings have come from an unusually wide range of areas within physics, such as condensed matter physics, astrophysics and particle physics. In 2005, he obtained the King Faisal International Prize. Prof. Wilczek contributes regularly to *Physics Today* and to *Nature*, explaining topics at the frontiers of physics to wider scientific audiences. He received the Lilienfeld Prize of the American Physical Society for these activities. Two of his pieces have been anthologized in Best American Science Writing (2003, 2005).