

# Visions of Particle Physics

Photography by Peter Ginter

Physicists and scientists of other disciplines around the world have created countless research sites that remind me of the colossal dimensions of ancient temples, in one way; and, in another, of fragile, beautiful little altars where they orchestrate experiments, with research objects largely invisible to the human eye. For example, the four new Large Hadron Collider (LHC) experiments currently being built at CERN, in Geneva, Switzerland, look like mind-boggling underground cathedrals, dug 100 meters or so under the Swiss mountains, where a sacred cast of extremely intelligent, but quite often shy, scientists are seeking the seemingly unnecessary. I am drawn to their research-caves not only by their unmatched beauty and complexity, but also by the opportunity to observe and interpret with a camera how these people have completely dedicated their lives to conquer the last frontiers in a universal group effort.

Here is where I can find a true “family of man,” where representatives of virtually all races around the globe work together feverishly in order to succeed. Above ground, I sometimes cover tragic conflicts, such as religious strife in Egypt, the struggle for survival in the gang-ridden slums of Manila, or the struggle for independence in West Papua.

Here, in these pages, I portray the scientific “family of man” in its environs. Shooting physics labs and creating a substantial body of photographic work for individual organizations has helped these institutions improve their public face and communication. Their research seems impossible without the support of the public as well as the political decision makers, the decisive group for funding research. To me, it has become terribly important to build as many bridges as possible between these two worlds—here, the family of science; there, the public and policymakers—which have been wary of each other, and at times mutually suspicious and even hostile. To be such a communicative link between these two worlds is a satisfying feeling, not to mention a lifelong self-educating endeavor.

Peter Ginter has completed more than 60 photojournalism projects on research alone in almost as many countries. He has won five World Press Awards and the Art Director's Club Gold Medal for producing photographic essays in all fields of science. Ginter can be contacted at [contact@peterginter.com](mailto:contact@peterginter.com)



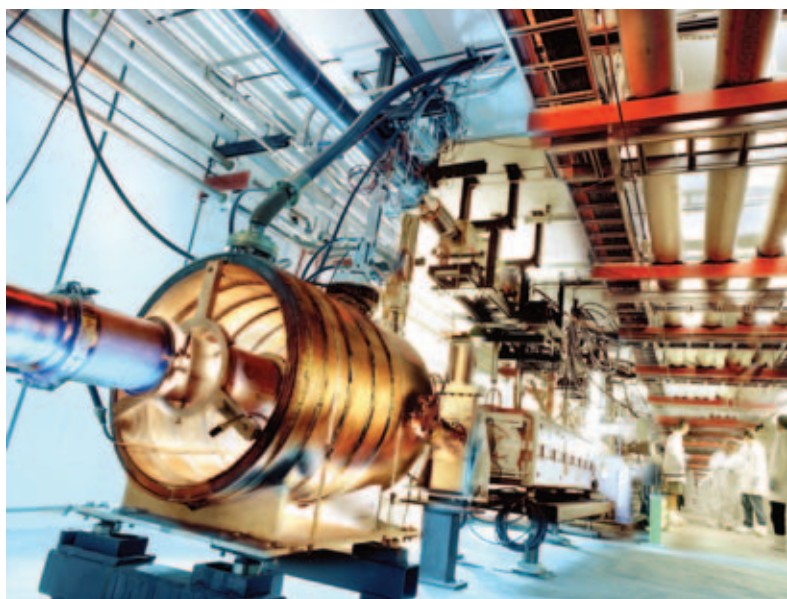




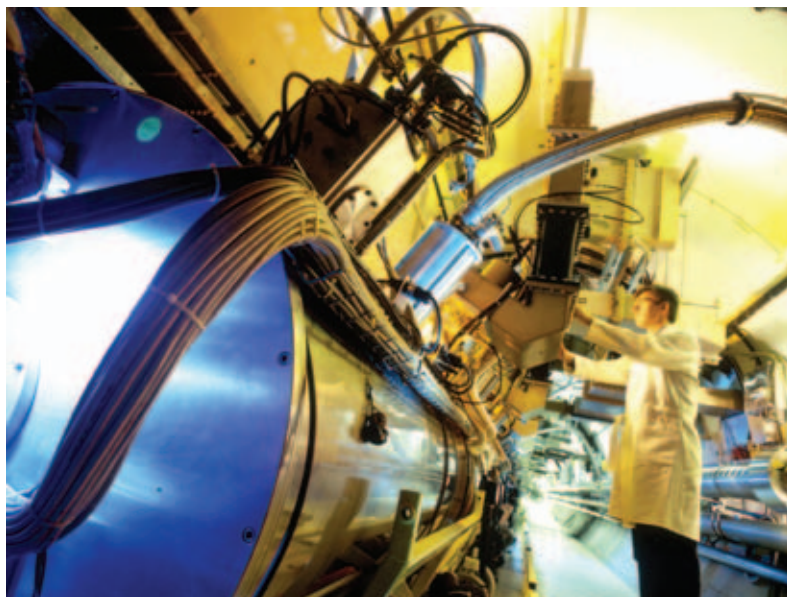
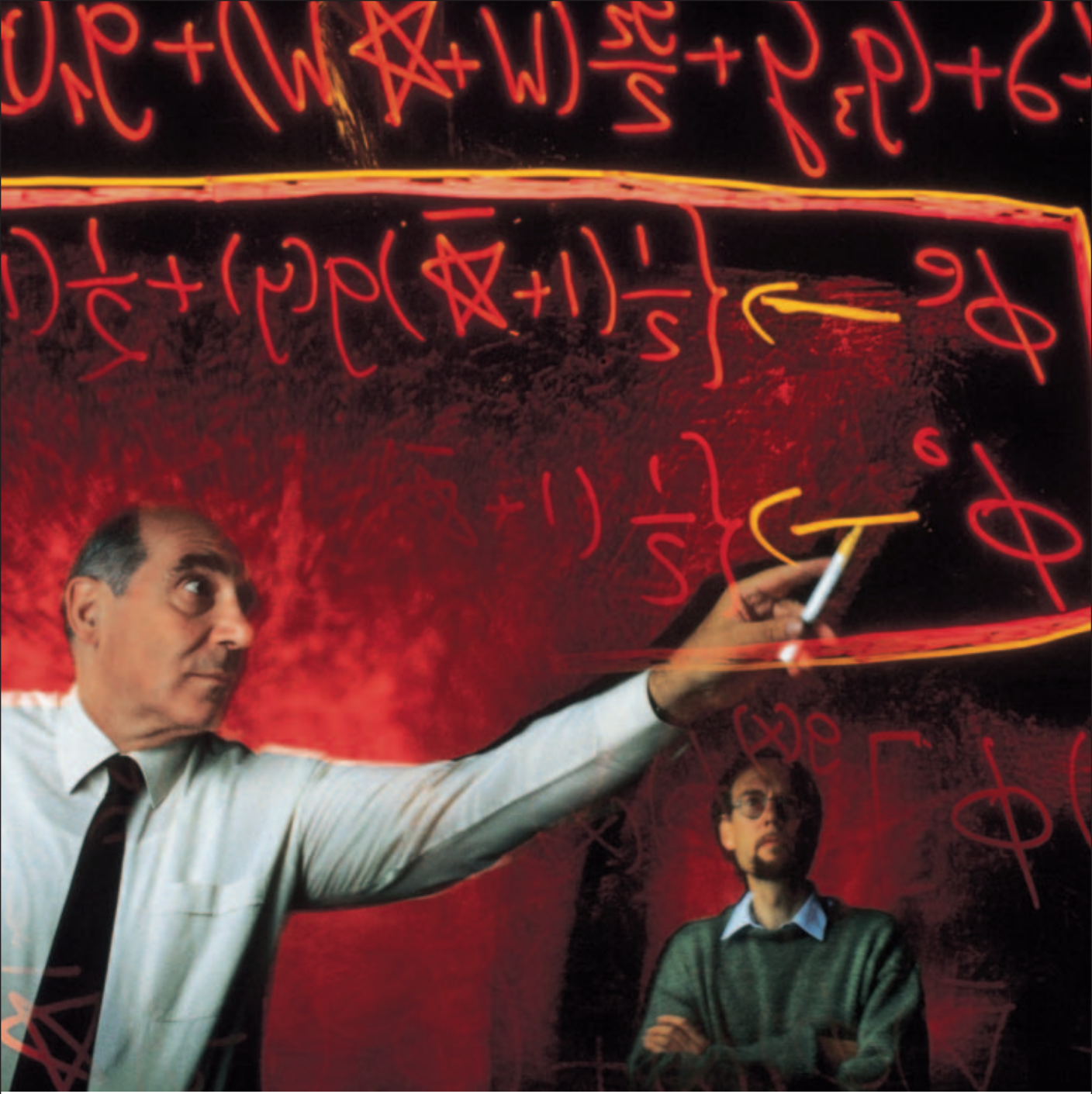
### Fermilab

Image 1: A summer student working on the MiniBooNE experiment inspects a photomultiplier tube used to detect light from neutrino interactions.

Image 2: The Main Injector accelerates protons and antiprotons and transfers them to the Tevatron, the world's most powerful particle collider.







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#### CERN

Image 3: A scientist examines the superconducting cavities of the Large Electron Positron Collider, which was in operation from 1989 to 2000. The tunnel, 27 kilometers in circumference, will host the Large Hadron Collider next.

#### DESY

Image 4: Two particle theorists examine equations written on a glass pane.

Image 5: Scientists of the IceCube experiment prepare spheres with photomultiplier tubes before shipping them to the South Pole. The modules get positioned up to 2.5 kilometers deep in the Antarctic ice.

#### SLAC

Image 6: A technician checks a radio frequency cavity used to accelerate particles.

Image 7: Scientists use the BaBar detector, which weighs more than one thousand tons, to observe high-energy collisions of electrons and positrons.



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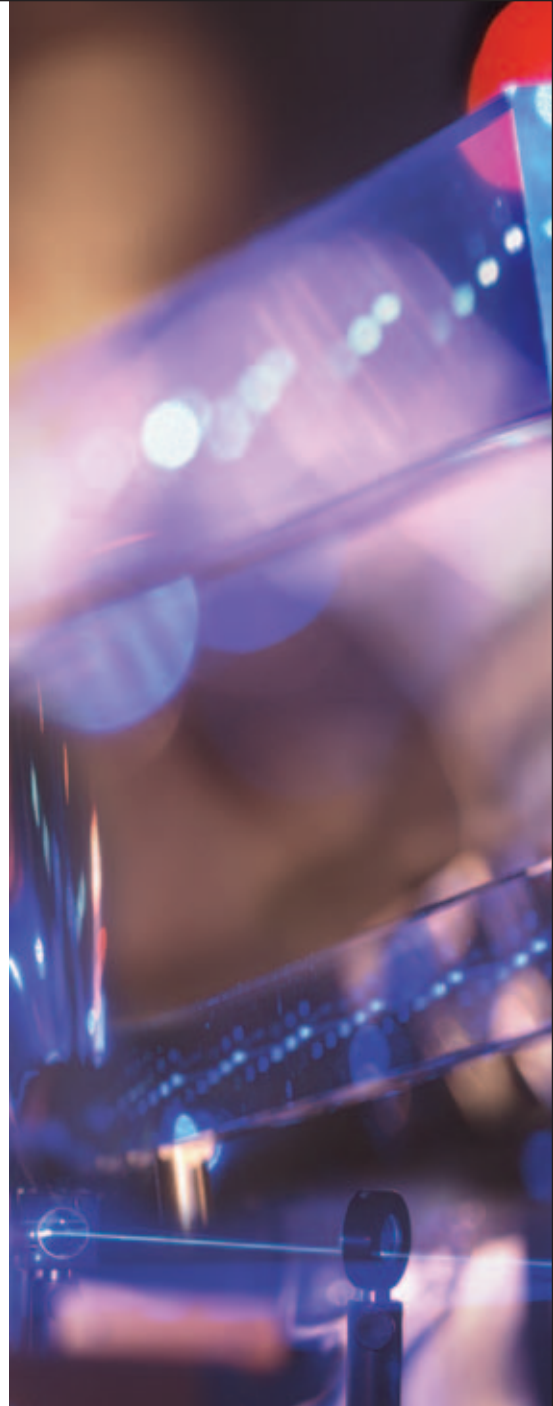
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**Fermilab**

Image 8: Two scientists check some of the 282 detector planes of the MINOS neutrino experiment.

Image 10: A scientist assembles a superconducting radio frequency structure in a clean room. The niobium cavities are a key component of the "cold" particle acceleration technology chosen for the design of the proposed International Linear Collider.

**CERN**

Image 9: One of eight magnetic coils for the ATLAS experiment arrives in Switzerland. Each coil is manufactured in Spain and weighs about one hundred tons.

**SLAC**

Image 11: A physicist monitors the testing of crystal bars with laser light. The bars are part of the BaBar particle detector.

**DESY**

Image 12: A focusing magnet for the HERA collider hangs from a crane inside the H1 building.



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