

## In Search of the Holy Grail

Particle physicists' quest for the subatomic building blocks of the universe.

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Earlier this month, CERN confirmed, with 99% certainty, the July 2012 [discovery of the Higgs boson](#), an elementary particle weighing 126 times the mass of the proton. The Higgs boson, sometimes referred to as "the God particle" by the media, is considered the holy grail of particle physics. Discovery of the particle, theorized for decades, may explain why matter has mass.

Discovery of the Higgs, and subsequent work examining its properties, is needed to confirm or refute the Standard Model—a particle physics theory concerning the nature of interactions between subatomic particles, those building blocks of the universe that are even smaller than an atom. Just last month we explored the [physics of the very big](#); here we explore the how and why of the physics of the very small.

Image source: CERN



### Article [Particle Detectives](#)

Physicists at Brookhaven National Laboratory manage and analyze petabytes of data from the ATLAS Experiment at CERN's Large Hadron Collider in search of answers about the universe's smallest constituents.



### Podcast and Full Event Audio [Exploring the Universe with Brian Cox](#)

Physicist Brian Cox talks about the future of physics as the search for the Higgs Boson heats up at CERN's Large Hadron Collider.



### Podcast [The LHC: Physics' New Golden Age](#)

Nobel Laureate and Academy [Board member](#) Frank Wilczek explains the Large Hadron Collider and its potential to revolutionize the field of physics.



### Podcast [String Theory for Dummies](#)

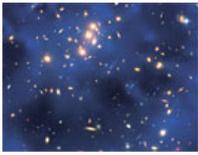
Without getting bogged down in the math, Jim Gates, the John S. Toll Professor in Physics at the University of Maryland, explains the beautiful set of equations which may or may not describe our universe.



### Article [Heavy Ions and the Fifth Dimension](#)

Princeton Physics Professor and Academy Blavatnik Prize winner Steven Gubser attempts to connect string theory to the real world.

### Article [The Imperfect Universe](#)



Can our knowledge of Nature ever be complete? Appleton Professor of Natural Philosophy and Professor of Physics and Astronomy at Dartmouth College Marcelo Gleiser considers.

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