

THE DISCOVERY OF
A NEW FORM OF MATTER
WILL REWRITE THE STORY OF
THE QUANTUM UNIVERSE.



THE HIGGS

Today's standard model of particle physics, with its quarks and leptons and symmetry-linked forces, describes nearly all high-energy phenomena observed with existing particle accelerators. Its accuracy is remarkable, but it only works because of an unverified hypothesis that literally holds everything together: the Higgs mechanism. The standard model makes sense only when a hitherto unobserved field is introduced that in our era of cosmic evolution has condensed into a space-filling stuff that gives particles their mass. When this stuff is excited at sufficiently high energy, it should appear as a particle – the Higgs particle. Careful measurements of particles affected by the Higgs have allowed physicists to estimate at what energy it will appear. This energy is at the limit of the Fermilab Tevatron and well within the range of the Large Hadron Collider and the International Linear Collider.