

Physics 10 Particle Physics in the LHC Era. Professor Dine

Fall, 2006. Homework Set. Due Tues., Oct. 24, 2006 .

1. The four forces:

(a.) Electromagnetism and gravity are the two fundamental forces which dominate our everyday lives. The strong force and the weak force were not uncovered until the early 1900's. Why are they not evident in our day to day experience?

(b.) Briefly, why are the strong and weak forces important in shaping the world around us?

2. Future discoveries:

(a.) Name some elementary particles that physicists hope to discover in future experiments?

(b.) Explain why experiments and theory in particle physics are important if we are ever to understand the history of the universe at times very close to the big bang.

Some References

1. National Academy Report on particle physics, EPP2010, Executive Summary
http://newton.nap.edu/execsumm_pdf/11641
2. The Particle Adventure
<http://particleadventure.org/particleadventure/index.html>
3. The Particle Data Group
<http://pdg.lbl.gov>
4. *Inward Bound*, A. Pais
5. *The Elegant Universe*, Brian Greene
6. *Warped Passages*, Lisa Randall