Enduring Understandings

1. Claims are made based on data that comprise the evidence for the claim.

2. Particle physicists use conservation of energy and momentum to discover the mass of fundamental particles.

3. Indirect evidence provides data to study phenomena that cannot be directly observed.

4. Scientists continuously check the performance of their instruments by performing calibration runs using particles with well-known characteristics.

5. Data can be analyzed more effectively when properly organized; charts and histograms provide methods of finding patterns in large data sets.

6. Data can be used to develop models based on patterns in the data.

7. Physicists use models to make predictions about and explain natural phenomena.

8. Particle decays are probabilistic for any one particle.

9. Physicists must identify and subtract "noisy" background events in order to identify the "signal".

10. Well-understood particle properties such as charge, mass, and spin provide data to calibrate detectors.

11. The Standard Model provides a framework for our understanding of matter.

12. Research questions, experiments and models are formed and refined by observed patterns in large data sets.