

- 00:17:15 **26.** at roughly the speed of .
- 00:18:00 **27.** The energy of the proton beam is roughly the same as the Eurostar going at mph.
- 00:19:20 **28.** The LHC is huge because we cannot build magnets which are enough.
- 00:20:00 **29.** The energy of the beam and the field strength is .
- 00:20:40 **30.** The coldest regions of outer space are around kelvin.
- 00:21:50 **31.** The LHC is even sensitive to extra rain in lake .
- 00:22:30 **32.** There are regions where the beams can interact.
- 00:24:20 **33.** Here at RAL we are involved in out of the 4 experiments.
- 00:25:10 **34.** The detectors are a few away from the collision.
- 00:26:10 **35.** We cannot see with our detectors.
- 00:26:10 **36.** Quarks, gluons and sometimes create jets of particles.
- 00:26:50 **37.** Charged particles kick out of the material they pass through.
- 00:27:50 **38.** We use the of the particles and extrapolate to see where they came from.
- 00:28:20 **39.** Curvature corresponds to .
- 00:29:00 **40.** Calorimeters are used to study particles.
- 00:30:40 **41.** We use of tonnes of materials to try to stop all particles.
- 00:31:00 **42.** Particles detected by the electronic calorimeter will predominantly interact with the of the absorber atoms.
- 00:31:00 **43.** Particles detected by the hadronic calorimeter will predominantly interact with the of the absorber atoms.
- 00:32:00 **44.** Muon detectors sit on the of the detector.
- 00:34:00 **45.** We look for missing to see if a particle passed through undetected.
- 00:34:50 **46.** The detector at the centre of ATLAS was built here in the UK.
- 00:35:50 **47.** The most famous picture of ATLAS shows just the magnet for the muon detectors.
- 00:37:20 **48.** There are around million events per second.
- 00:38:20 **49.** Most of the data produced is discarded within microseconds.
- 00:41:50 **50.** Software is in particle physics.
- 00:43:30 **51.** Control rooms are staffed around the .