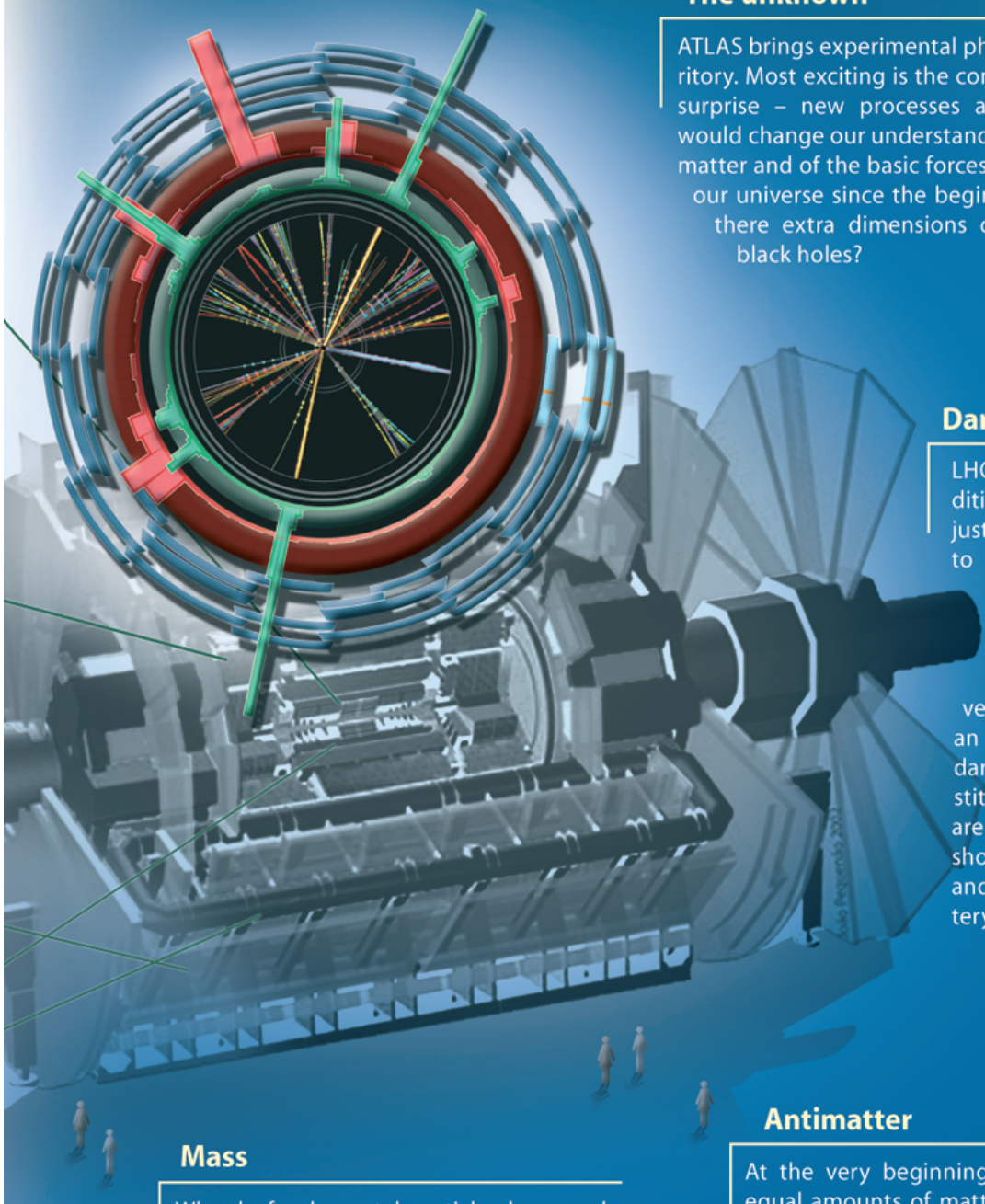
ATLAS Physics

The particles from a collision event leave tracks and deposit energy in the detector. This is a birds-eye perspective of how an event would look in the detector (the radial proportions are distorted).



The unknown

ATLAS brings experimental physics into new territory. Most exciting is the completely unknown surprise – new processes and particles that would change our understanding of energy and matter and of the basic forces that have shaped our universe since the beginning of time. Are there extra dimensions of space or mini-black holes?

Dark matter

LHC will recreate the conditions of the universe just after the Big Bang to understand why the universe is like it is today. It will investigate why the matter of the universe is dominated by an unknown type called dark matter. If the constituents of dark matter are new particles, ATLAS should discover them and elucidate the mystery of dark matter.

Mass

Why do fundamental particles have such different masses? Two of the greatest mysteries are how particles gain mass and how mass and energy are related. To explain these mysteries, theories predict a new particle, the Higgs particle. If this particle exists, ATLAS will discover it and provide great insight into the problem of masses.

Antimatter

At the very beginning of the universe, equal amounts of matter and antimatter existed. But why was some of the matter left over to create galaxies, the solar system with our beautiful planet, and us? ATLAS will explore the tiny difference that exists between matter and antimatter.