When will the LHC come full circle?

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The LHC is the largest and most energetic particle physics experiment ever made. By colliding protons accelerated close to the speed of light to energies of 7, 8, and 13 TeV, the LHC experiments probe the smallest components of matter and study how they interact with each-other in controlled conditions that emulate the Universe a fraction of a second after the Big-Bang.

The LHC is currently undergoing its second long shut-down, and has been in operation for a decade. The two largest experiments, ATLAS and CMS, are closing in 900 publications each, with a milestone discovery, the Higgs boson, announced in 2012.

At its most fundamental level the Universe remains puzzling. The standard model of particle physics is clearly incomplete but nature does not like to strand away much from it at the energies we are able to reach at the LHC so far. Although many theoretical models are being tested, many of the questions present before the discovery of the Higgs boson still remain. Will we find new particles? Or will we see the SM prevail without any deviation all the way? The answer will always require more data.

During this talk I will give an introduction to the LHC and its experiments with a small overview of what has been accomplished in the last decade, to then discuss what the future could hold in store.