Techniche 2016

Finding the Voice of the Universe

Dr. Fred Raab, for the LIGO Scientific Collaboration and the Virgo Collaboration

Head, LIGO Hanford Observatory

The search for gravitational waves is a story of high-risk, high-reward, basic research and the persistence and evolution of the scientific community that achieved this result. A century ago, Einstein showed that his new General Theory of Relativity exhibited gravitational waves, analogous to the light waves of Maxwell’s Theory of Electromagnetism. Doubts persisted about the reality of gravitational waves until the mid 20th century, just as the first experimental efforts to detect these waves were beginning. In the last quarter of the 20th century, the influence of gravitational-wave emission on astronomical objects was first observed. Finally, on 14-Sep-2015, LIGO detectors made the first direct detection of gravitational waves, opening a radical new way of observing our universe. This talk will describe the challenges that were overcome to achieve this historic event and possible future directions for this new filed of astronomy.