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LIGO and the bright future of gravitational wave astronomy

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The three LIGO gravitational wave detectors in the Livingston and Hanford Observatories have operated at their design sensitivity until October 2007, by collecting one year of triple coincidence data. An upgrade of the two 4 km detectors further improved their sensitivity, and new science data were collected until October 2010 in the S6 science run. The enhanced detectors not only reached their best sensitivity ever, but also proved the technology which will be implemented in the Advanced LIGO detectors. Since October 2010, both the LIGO sites will see a major upgrade which will culminate in the next few years with about 10 times more sensitivity, starting the era of gravitational wave astronomy. In this talk, the recent performance and results of the S6 science run will be presented, together with an overview of the upcoming upgrades which will bring Advanced LIGO to detect gravitational waves.