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The Advanced LIGO Detectors

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After decades of development, the Advanced LIGO gravitational wave detectors are now operating, and they completed their first observational run in early 2016. Advanced LIGO consists of two 4-km scale interferometric detectors located at separate sites in the US. The first year of detector commissioning that led to the first observation run produced instruments that have several times better sensitivity to gravitational-wave strain than previous instruments. At their final design sensitivity, the detectors will be another factor of 2-3x more sensitive than current performance. This talk will cover the design of Advanced LIGO, explain how the sensitivity improvements have been achieved, and lay out the path to reaching final design sensitivity.