First observations of gravitational wave signals

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I shall present observations of gravitational radiation from stellar mass binary black hole mergers in LIGO detectors data. I shall make a short introduction to gravitational wave phenomenon. I shall briefly describe the method of measurement of gravitational signals. I shall present basic data analysis tools needed for the detections - models of binary black hole mergers and statistical methods of extraction of signals from the detector noise and estimation of their parameters. I shall discuss implications of the observations both for fundamental physics and astrophysics. I shall also summarize results of several astronomical observations in coincidence with detected gravitational wave events.

Finally I shall present results of searches for other gravitational wave signals than binary black hole mergers.

[1] The LIGO Scientific Collaboration, the Virgo Collaboration, Phys. Rev. Lett. **116**, 061102 (2016).
[2] The LIGO Scientific Collaboration, the Virgo Collaboration, Phys. Rev. Lett. **116**, 241103 (2016)
[3] The LIGO Scientific Collaboration, the Virgo Collaboration, Phys. Rev. Lett. **118**, 221101 (2017).