Gravitational waves

THEORETICAL AND EXPERIMENTAL ASPECTS

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PART I

The weak field limit of General Relativity

PART II

Interferometric detection of GWs

8.1. The noise spectral density

8.2. Optical readout noise

8.2.1. Shot Noise

8.2.2. Radiation pressure

8.2.3. The standard quantum limit

8.3. Displacement noise

8.3.1. Thermal noise and the Fluctuation-Dissipation theorem

8.3.2. Seismic and Newtonian noise

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PART III

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PART IV

Data analysis

13. Matched filtering
14. Coalescence of compact binaries (BBH, BNS)
15. BBH detections and tests of general relativity
16. GW170817 and multi-messenger astronomy

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