

# Probing the Universe with Gravitational Waves

**Aug 3<sup>rd</sup> 11:00am-12pm** to the Public

Roundtable discussions with students at B104 12:30-1:30pm.

Refreshment will be served at 10:45am.

**Harvard University**

**Northwest Building B103 Room**

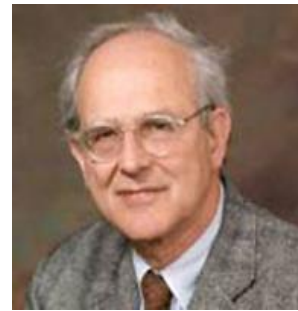
52 Oxford St. Cambridge MA02138

## Rainer Weiss Professor OF Physics 2017 Nobel Laureate

MIT on behalf of the LIGO Scientific Collaboration  Massachusetts Institute of Technology

### ABSTRACT

The observations of gravitational waves from the mergers of compact binary sources opens a new way to learn about the universe as well as to test General Relativity in the limit of strong gravitational interactions – the dynamics of massive bodies traveling at relativistic speeds in a highly curved space-time. The lecture will describe some of the difficult history of gravitational waves proposed about 100 years ago. The concepts used in the instruments and the methods for data analysis that enable the measurement of gravitational wave strains of  $10^{-21}$  and smaller will be presented. The results derived from the measured waveforms, their relation to the Einstein field equations and the astrophysical implications are discussed. The talk will end with a vision for the future of gravitational wave astronomy.



### Prof. Rainer Weiss Bio

- Born 1932 in Berlin Germany
- 1955 MIT BS
- 1962 MIT PhD
- 1960-1962 Tufts University  
Physics faculty
- 1962-1964 Post doc  
Princeton
- 1964-2001 MIT Physics  
Faculty
- 2001----- Emeritus
- 2001-----Adjunct Professor  
Of Physics LSU.

### Primary areas of research

Atomic clocks, Cosmic background radiation measurements, Gravitational wave detection.

### Seminar Co-Organized by



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Prof. Millie Dresselhaus**