Gravity waves!
Physics we’ve studied

- Longitude problem (celestial mechanics)
- Double slit: moving like a wave, hitting like a particle
- Speed of light/time dilation (special relativity)
- Particle mixing (frequency comb)
- History of computation
- Color range vs. pulse length (spectrum allocation)
- Particle introverts & extroverts
- Telescope resolution & interferometers
- Hanbury Brown & Twiss
- Trapped waves & atomic spectra
- Quantum dots
- Measurement order (polarizers)
- Quantum encryption
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This week

- Gravity waves
- Power generation
- Quantum electronics & computers
- Medical imaging, x-rays to MRI
Our interferometer
LIGO
LIGO
Sensitivity vs. ‘color’
Neutron stars and the birth of multi-messenger astronomy
Simulation of BH mergers

Hearing BH mergers

Hearing the NS merger
Lightcurve from *Fermi/GBM* (50 – 300 keV)

Gravitational-wave time-frequency map
Birth of ‘Multi-messenger Astronomy’

• Neutron stars merge into black holes

• Most of the elements heavier than iron come from NS mergers (Gold, etc.)