

# Astrophysical Sources of Gravitational Waves

## Why are astrophysical objects needed?

Dimensional analysis to get “coupling constant” for sourcing GWs

Why do they need to be compact?

## Stellar Evolution

- Types of stars and the main sequence
- Supernova and stellar remnants

## Some types of astrophysical sources

### Compact Binary Coalescences (CBC)

- How do these things get into binaries?
- Why are CBCs such good sources?
- What do CBC signals “sound like”?

### Other possible sources

- Unmodeled transients (Bursts)
  - Core collapse supernova
- Stochastic sources
- Continuous sources

## Suggested Reading

- *Shallow Water Analogue of the Standing Accretion Shock Instability*. PRL 108, 051103 (2012).
- *A Carillon of Black Holes*. arXiv:1803.08090 (2018)