



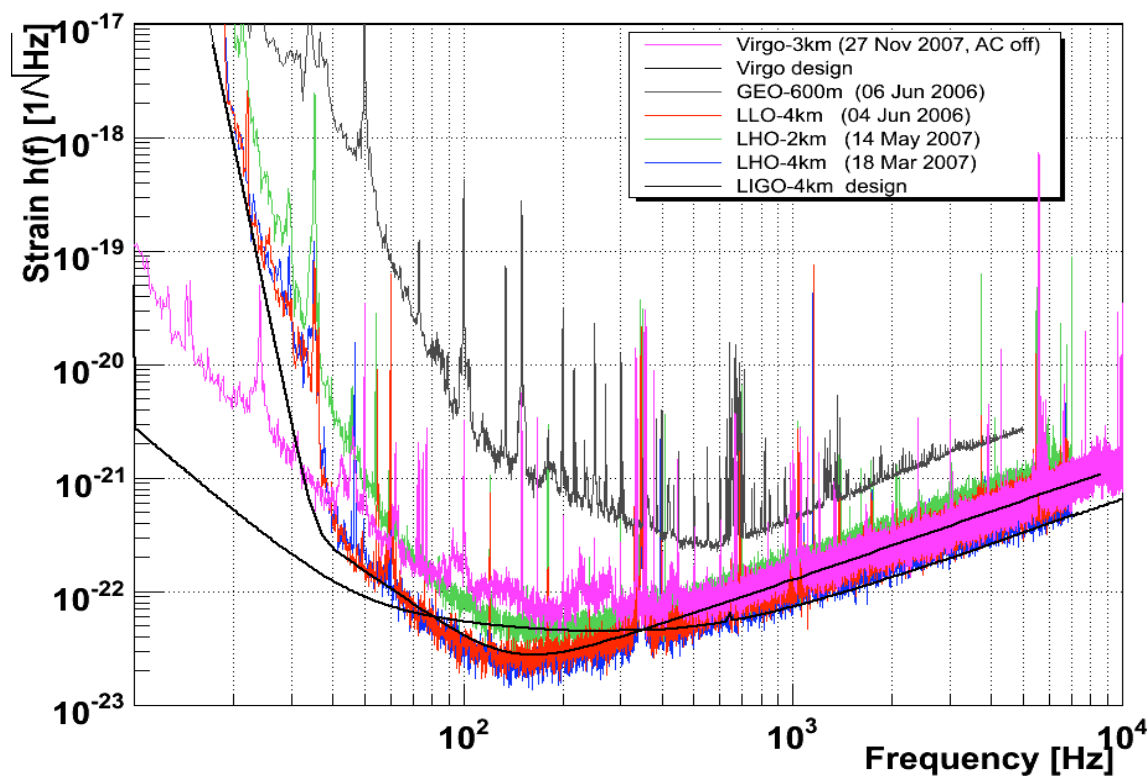
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# The next few years: “Enhanced” LIGO, Virgo + and AstroWatch

Gabriela González  
Louisiana State University



# S5 Sensitivity curves



BNS Inspiral range:

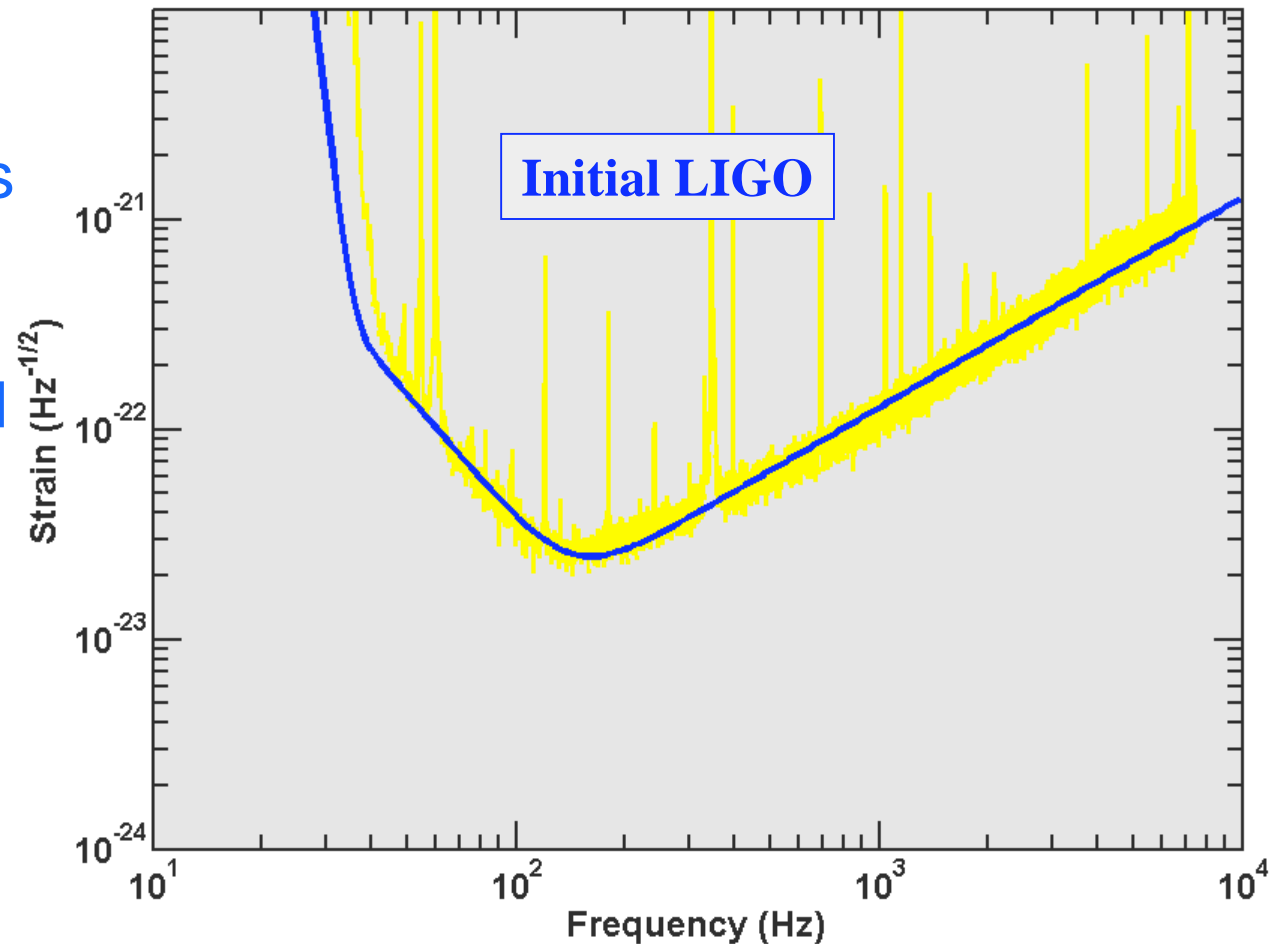
Virgo ~ 5 Mpc

H2 ~ 8 Mpc

H1, L1 ~ 15 Mpc

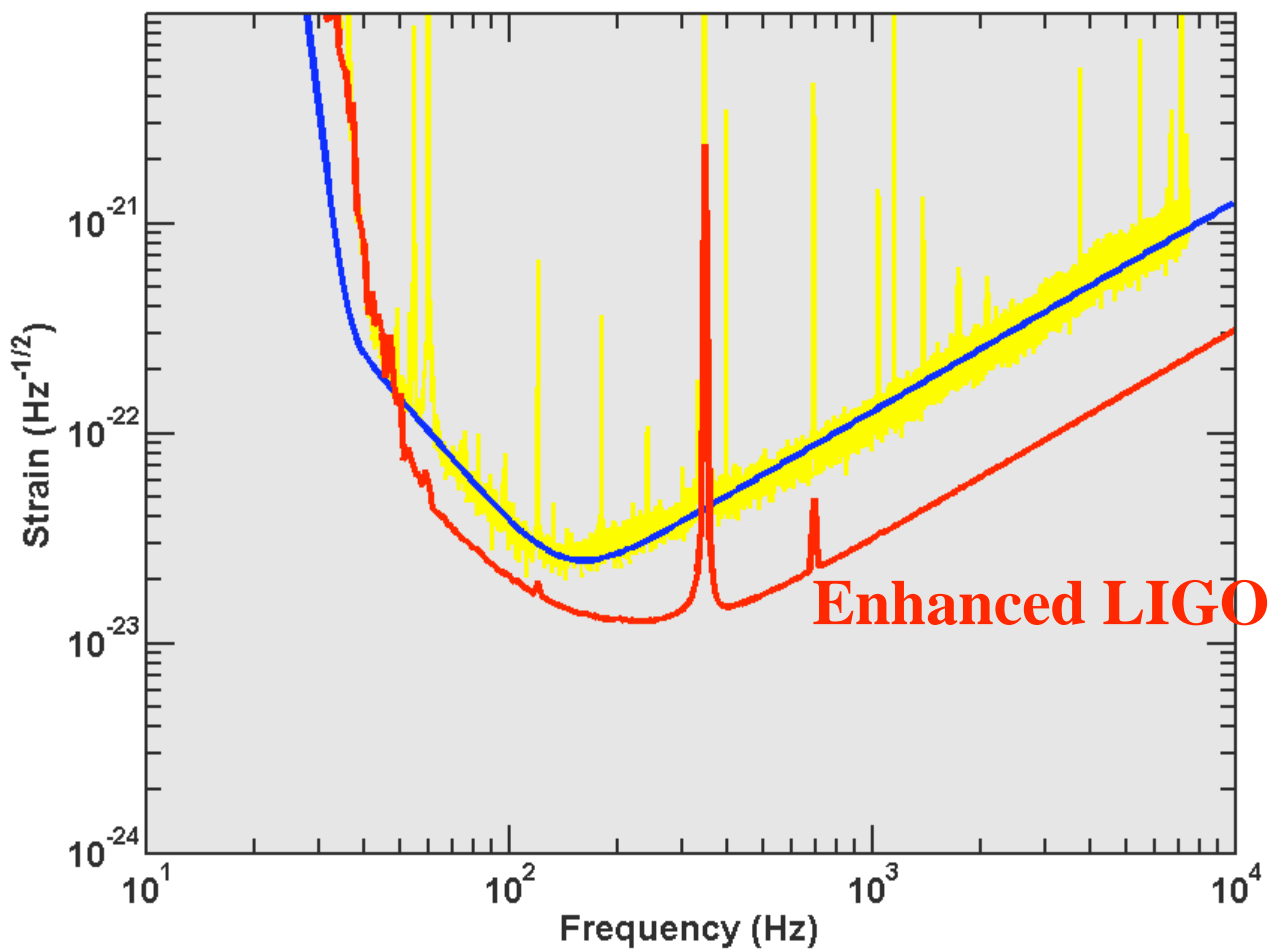
# Initial LIGO: S5

Final S5  
postrun  
measurements  
complete,  
Final  
calibration and  
data analysis  
in progress



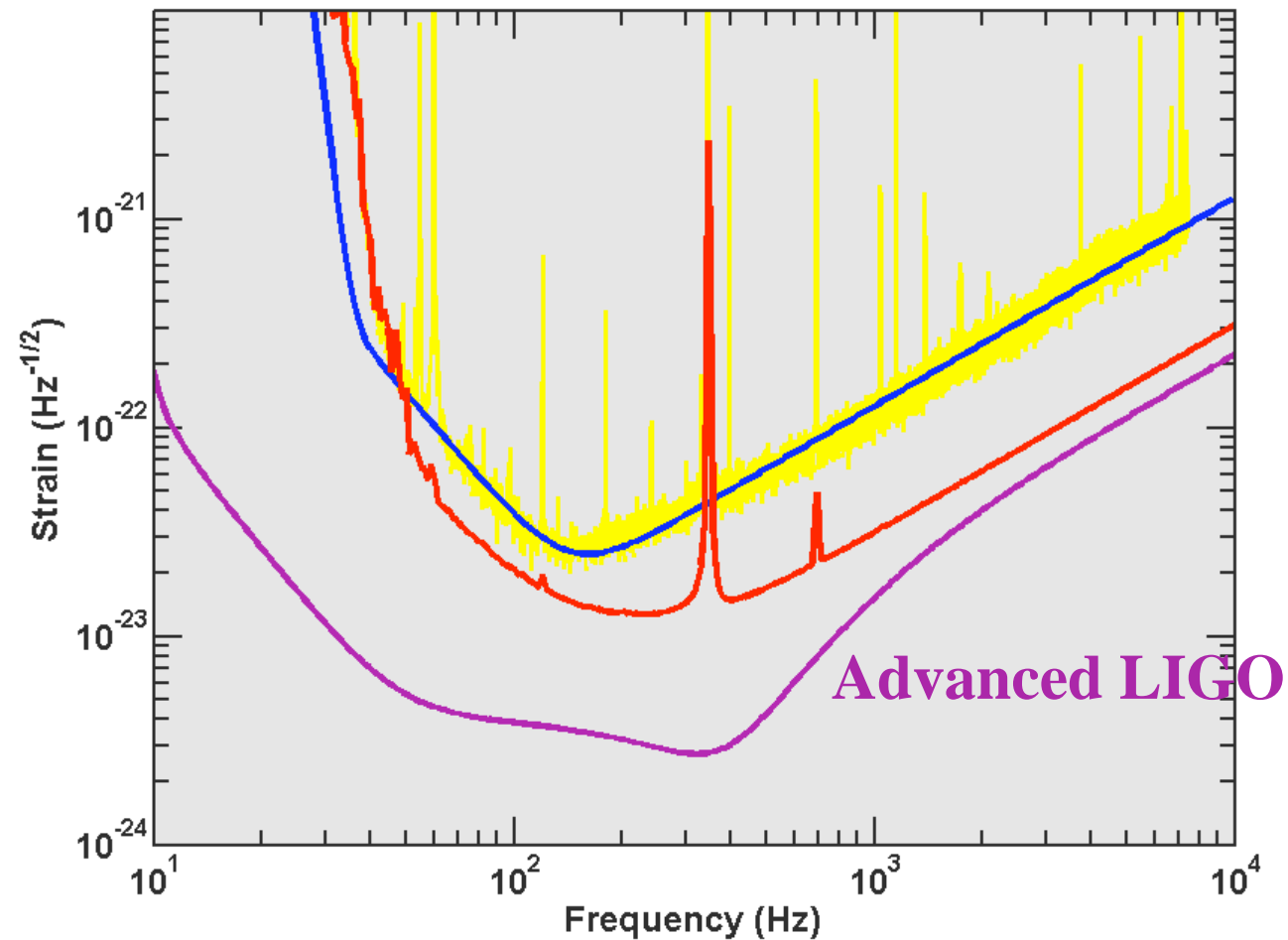
# Enhanced LIGO: S6

Enhanced LIGO is underway, Hardware being installed at both Observatories

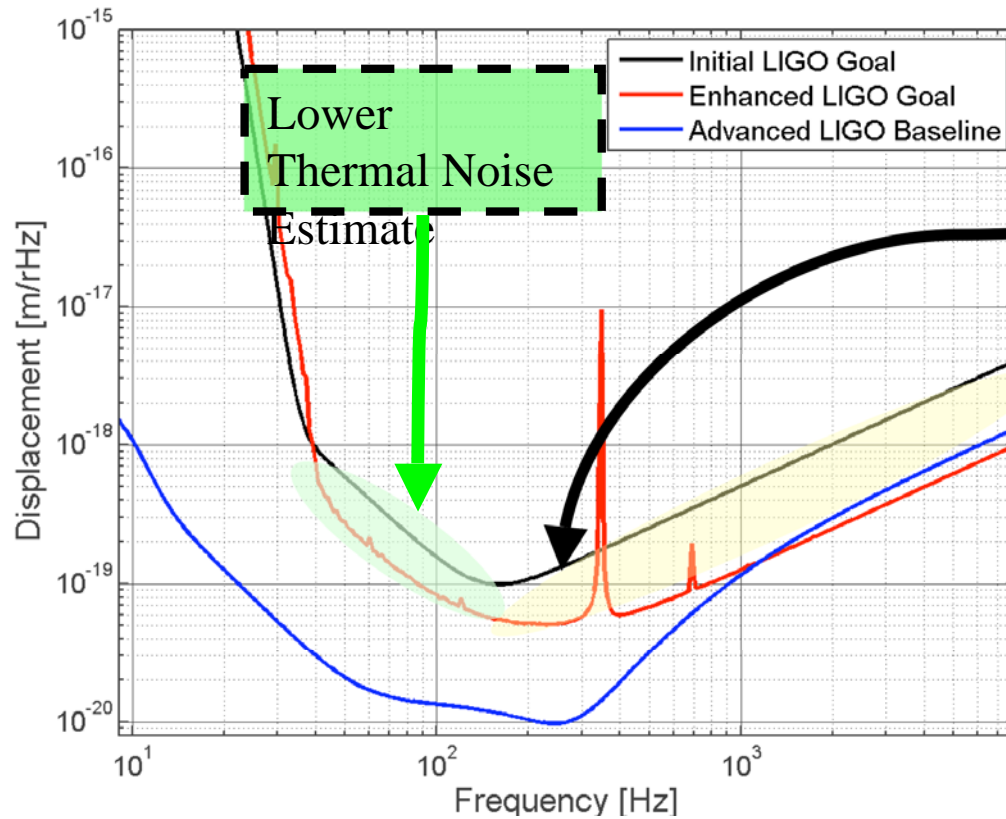




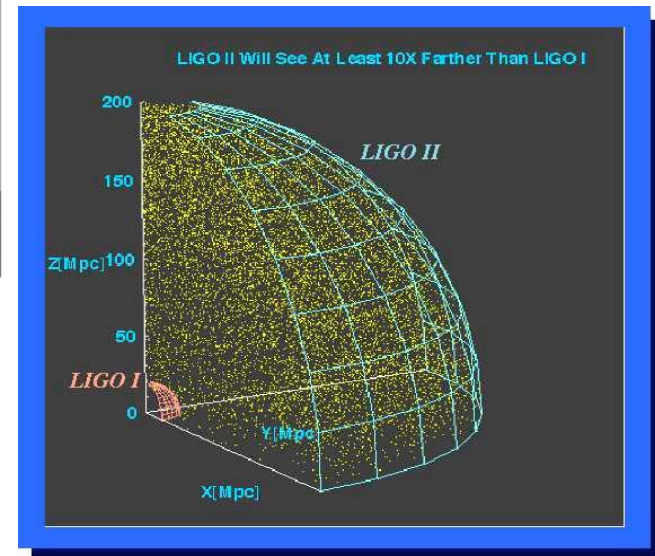
# Advanced LIGO: E?, S7,...?



# Enhanced and Advanced LIGO



Increased Power  
+ Enhanced  
Readout



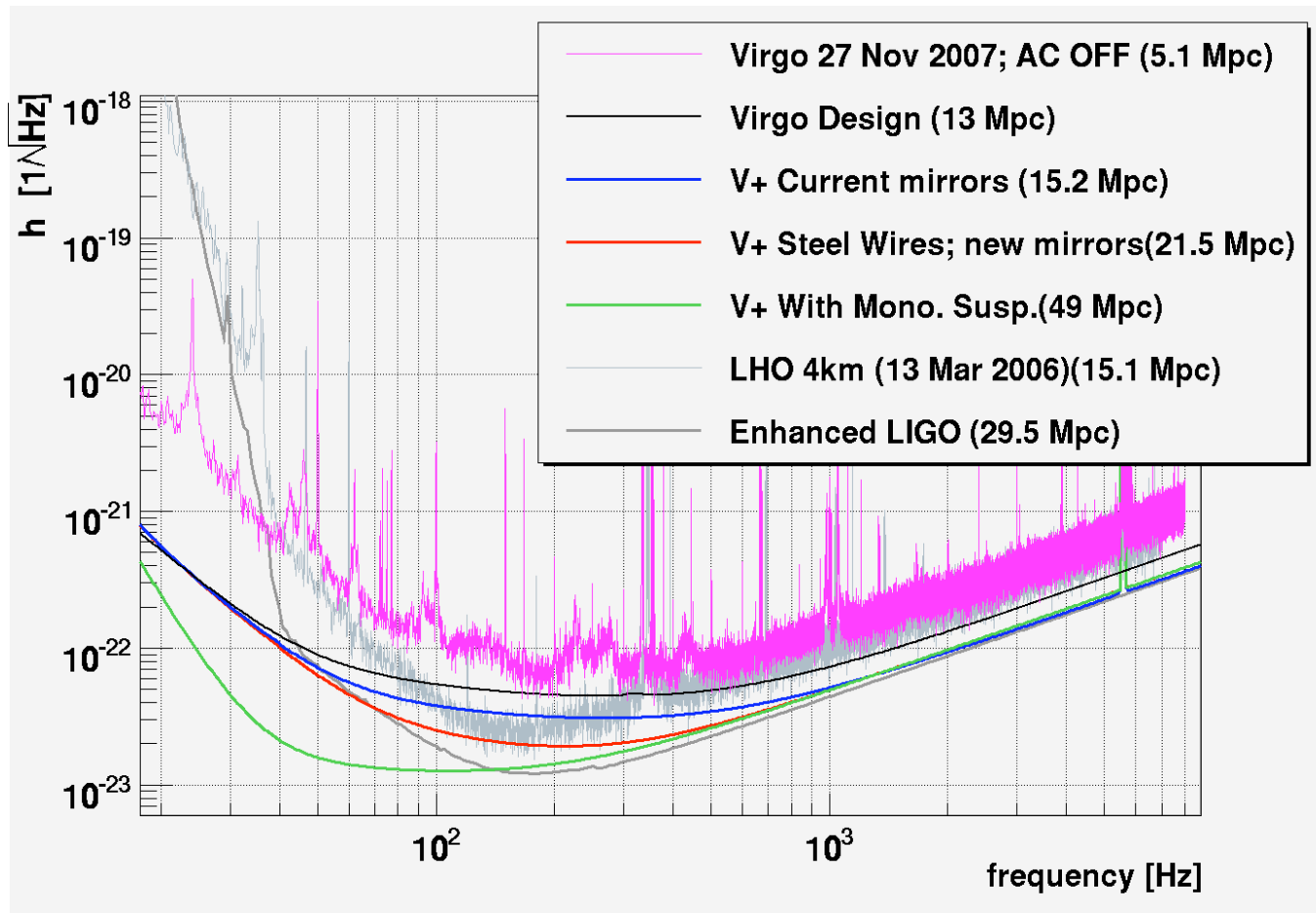


# Enhanced LIGO Sketch

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- **DC (= non RF) Readout + OMC** (cavity/detectors in-vac)
  - Reduce junk light, increase laser power
  - Upgrade the detection system to the Advanced LIGO style.
  - Hardware:
    - OMC suspension,
    - new HAM w/septum (installed already)
    - HAM active seismic isolation,...
- **Higher power laser (Hannover)**
  - Collaborators at AEI/LZH sending us 35 W lasers (for free!)
  - Laser arrived at LHO
- **High Power Input Optics (Univ of Florida)**
  - Advanced LIGO Modulators, Faraday Isolator
  - Installed at LLO!
- **Miscellaneous ...**
  - Change magnets in mirrors
  - Better thermal compensation systems
  - Better earthquake stops (electrostatic charging)

# Virgo +goal: VSR2 joint with S6





# Astrowatch

- Galactic supernova rate  $\sim 1/50$  years
- GRBs routinely observed by IPN et al.
- LIGO and Virgo down for enhancements in 2008 : potential to miss interesting triggers
- Astrowatch: H2-G1 coincidence, manned by graduate students
- Some H2 work planned, mostly to improve stability

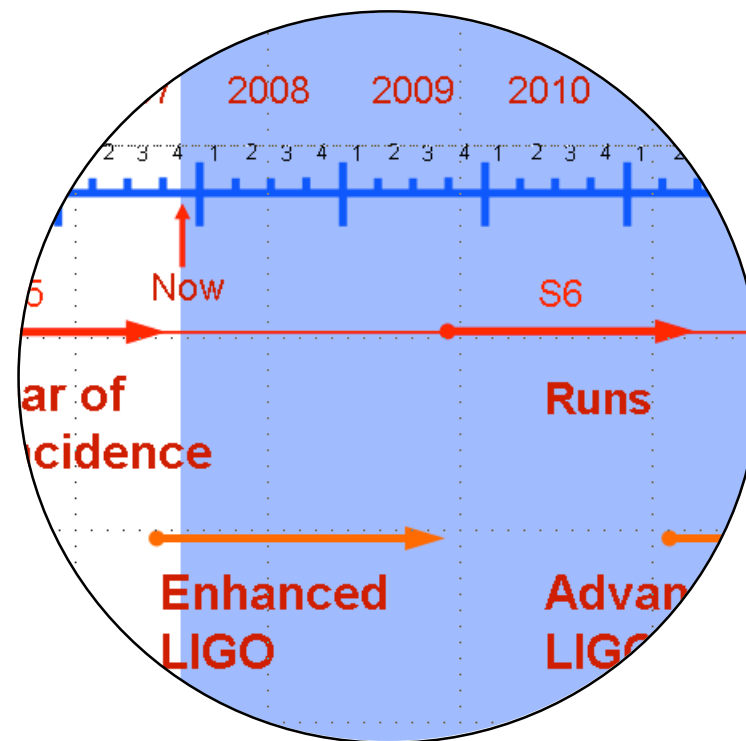


LHO 2km



GEO600

## Recall timeline:





# Approximate Schedule

