

Gravitačné vlny a LIGO

Nové okno do vesmíru



Peter Dupej

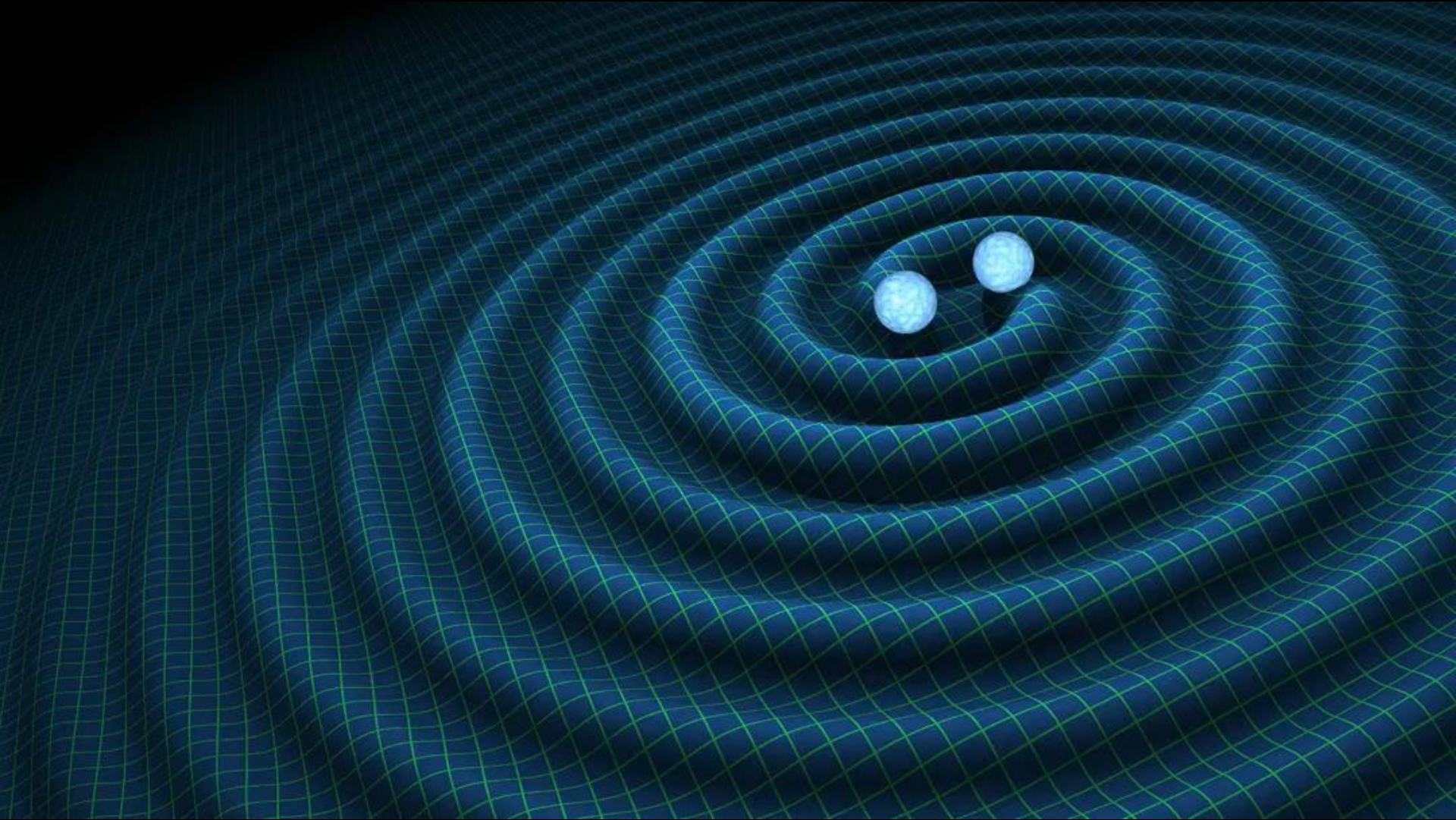
Institute for Gravitational Research
University of Glasgow



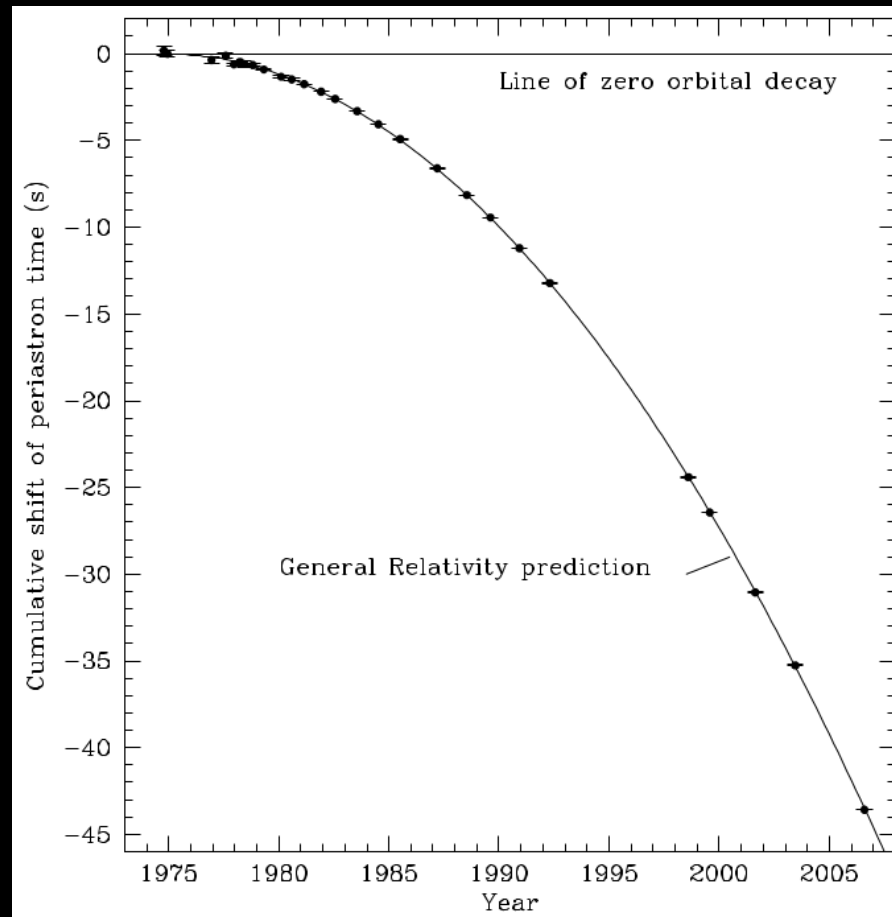
University
of Glasgow



Science & Technology
Facilities Council

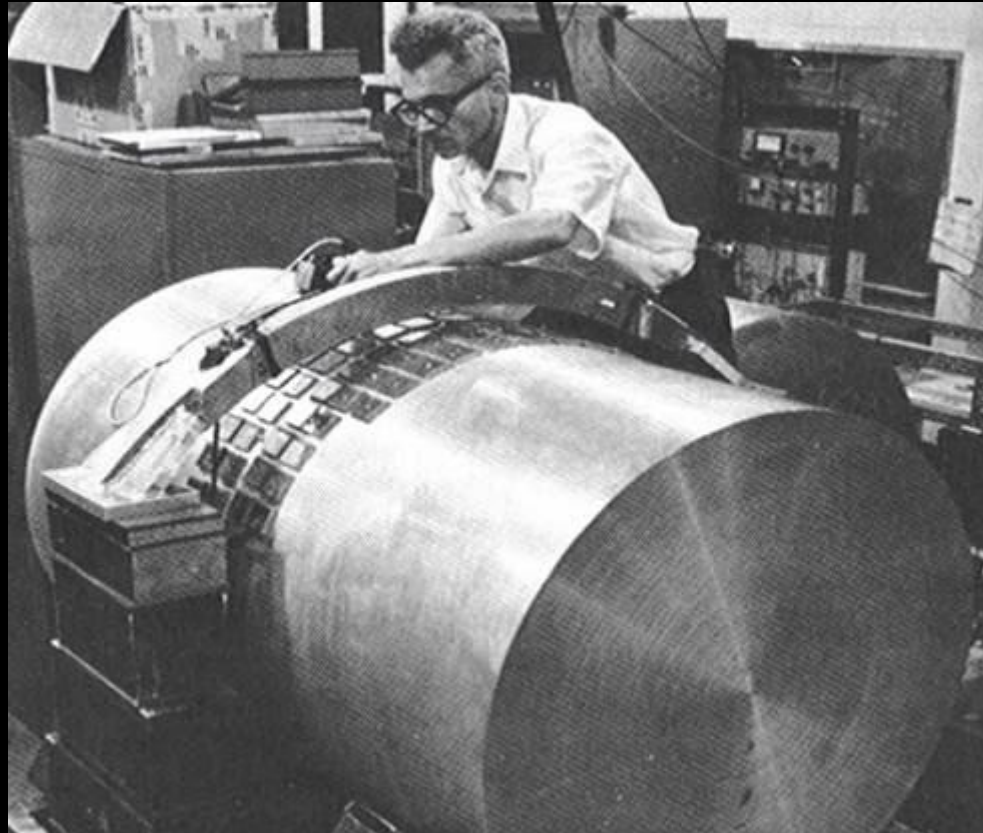


Nepriamy dôkaz existencie gravitačných vln pomocou pozorovania orbitálnej periódy pulsaru PSR B1913+16



Hulse a Taylor – Nobelová cena za Fyziku 1993

Rezonantné tyčové detektory

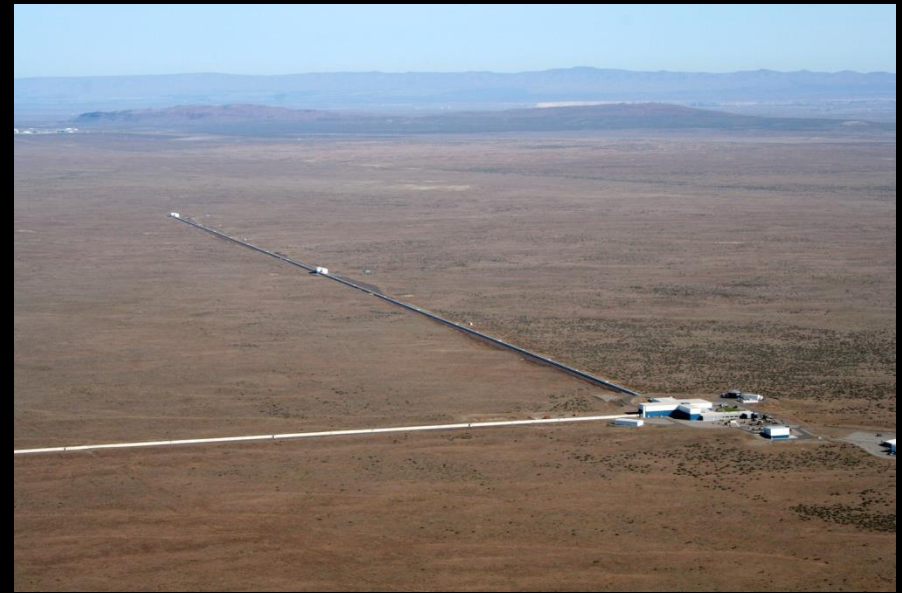


Professor Joseph Webber – Univeristy of Maryland 1969

Dva identické 4km detektory

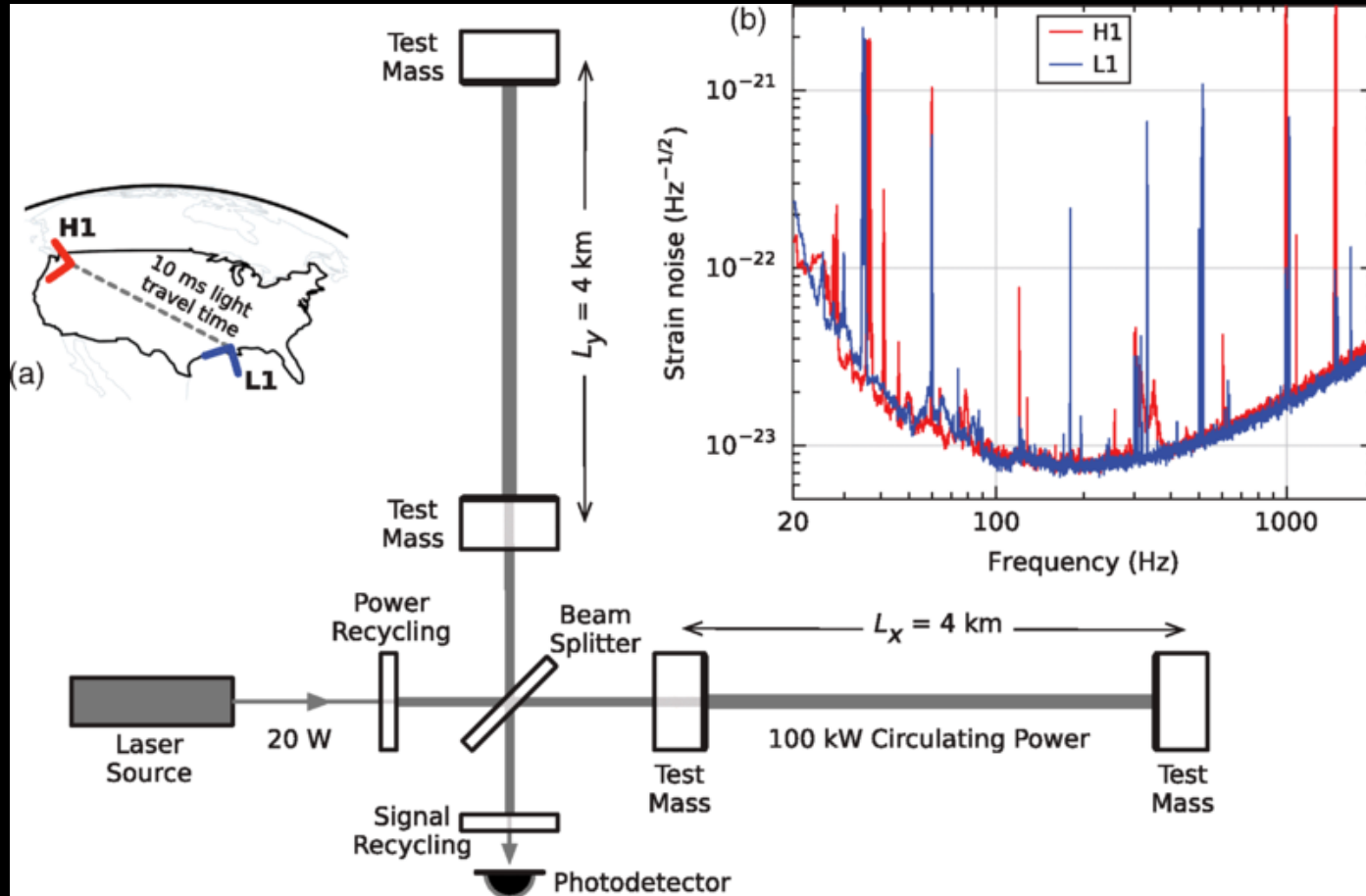


LIGO Livingston Observatory
Louisiana

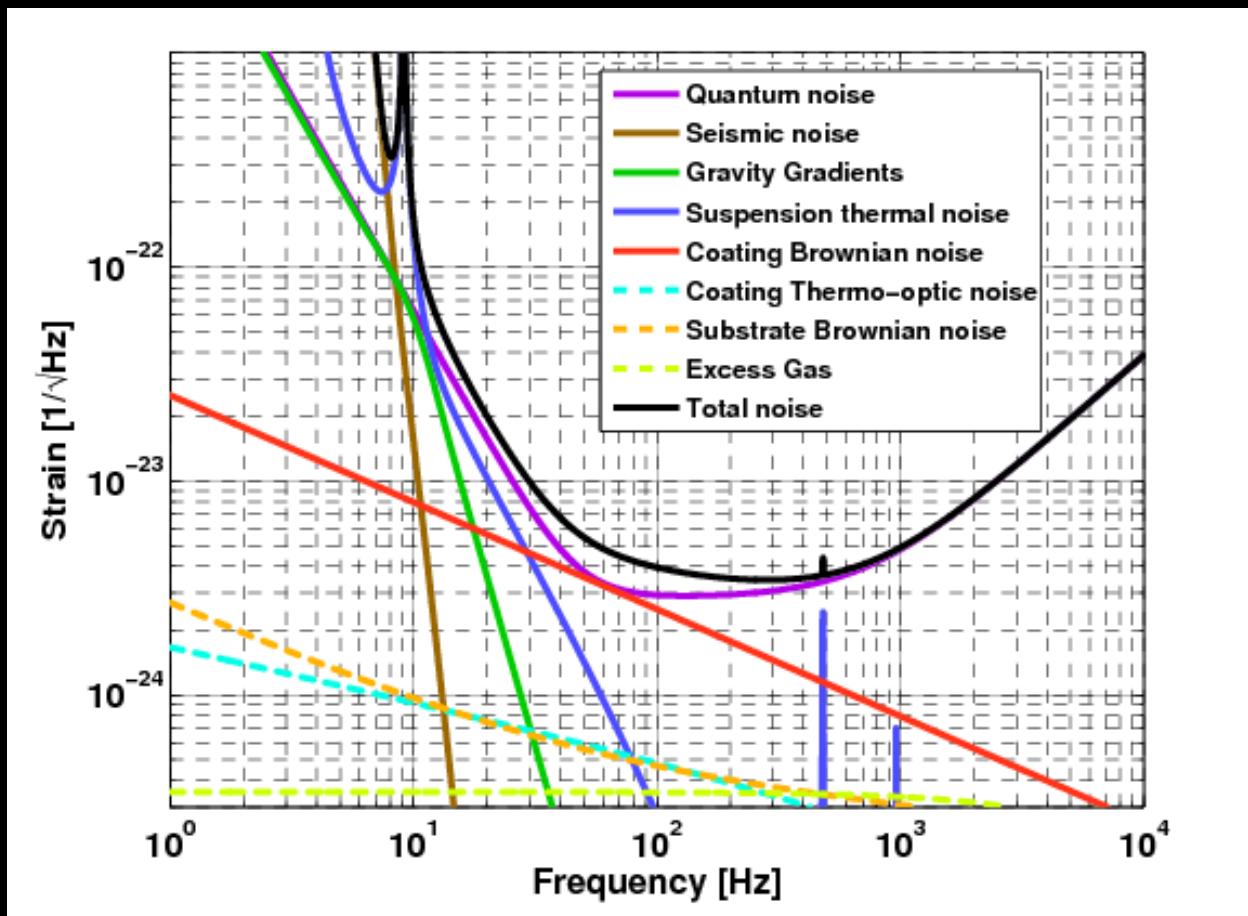


LIGO Hanford Observatory
Washington

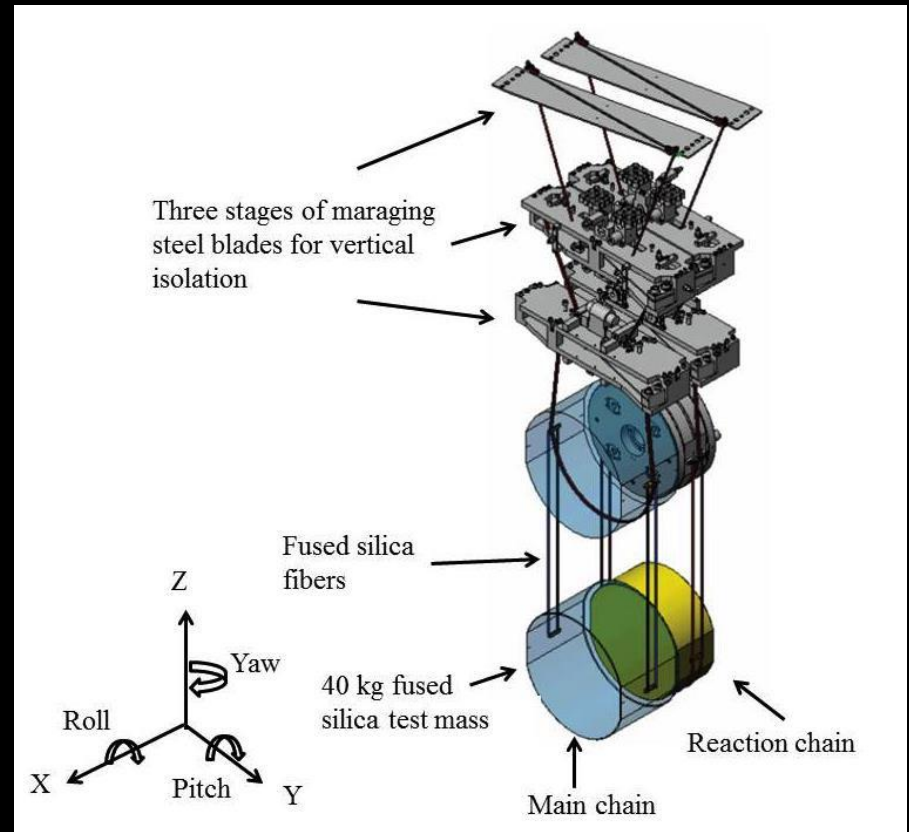
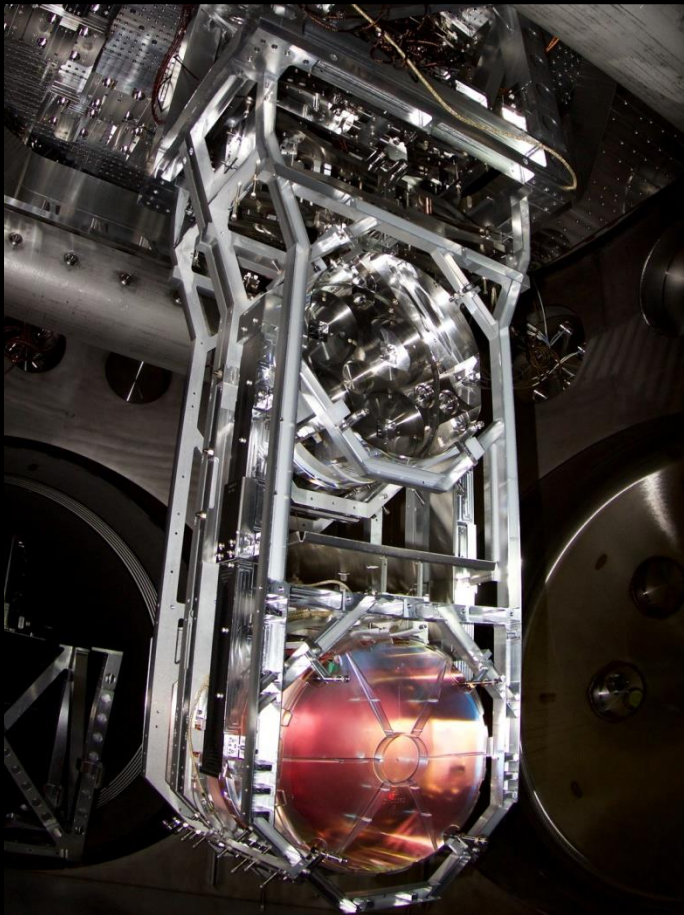
Advanced LIGO – najpresnejšie laserové pravítko na svete



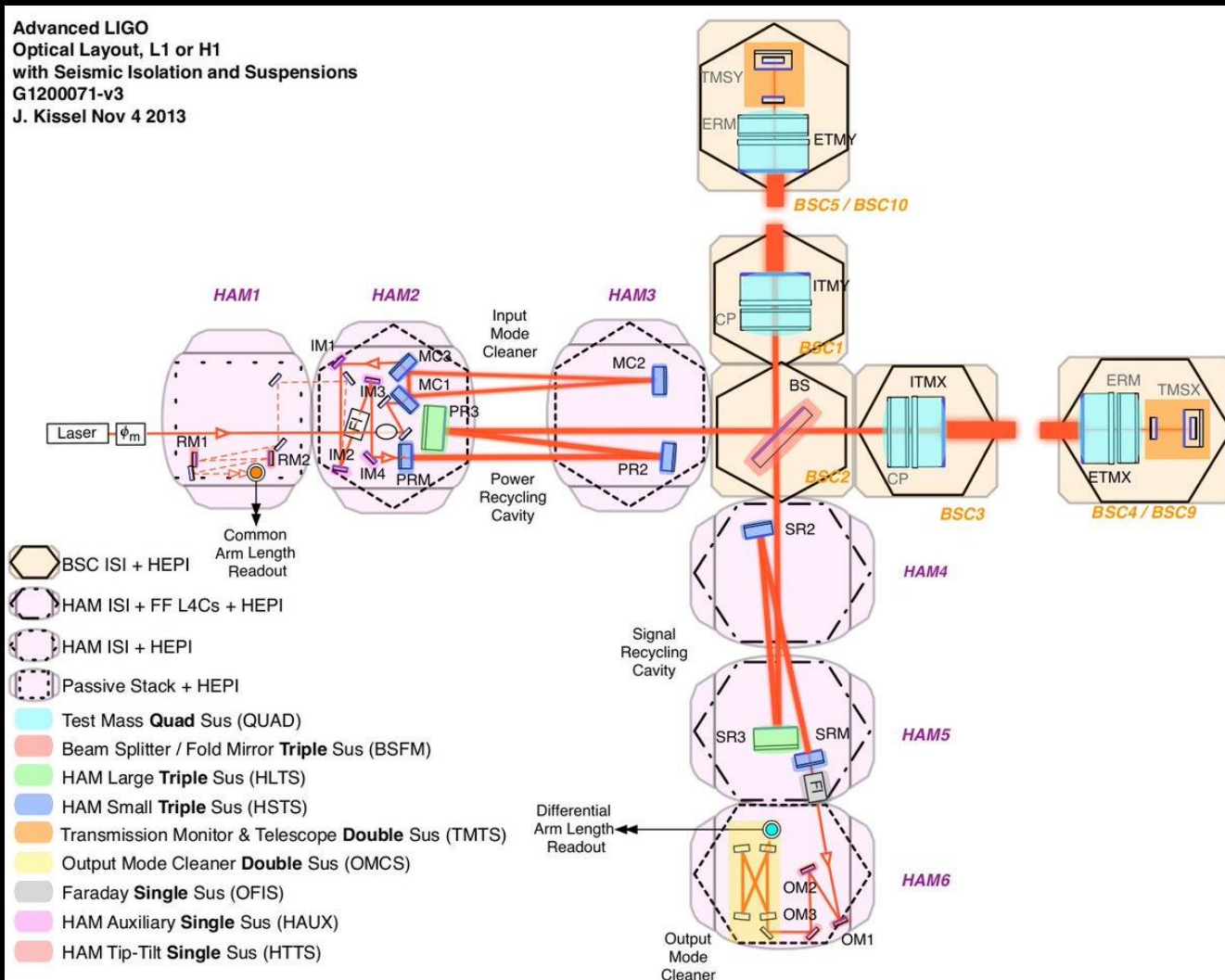
Rôzne zdroje šumov a ruchov



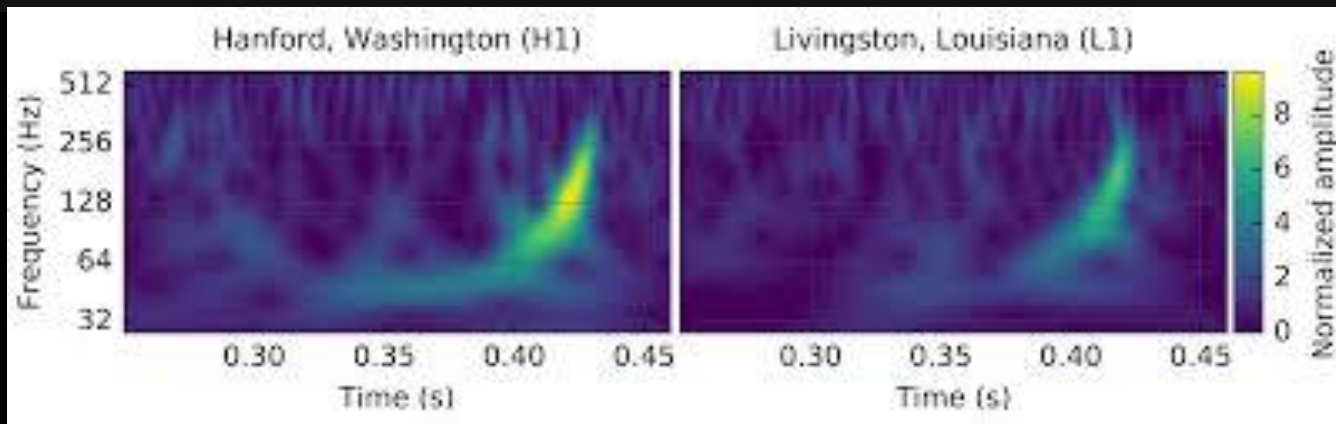
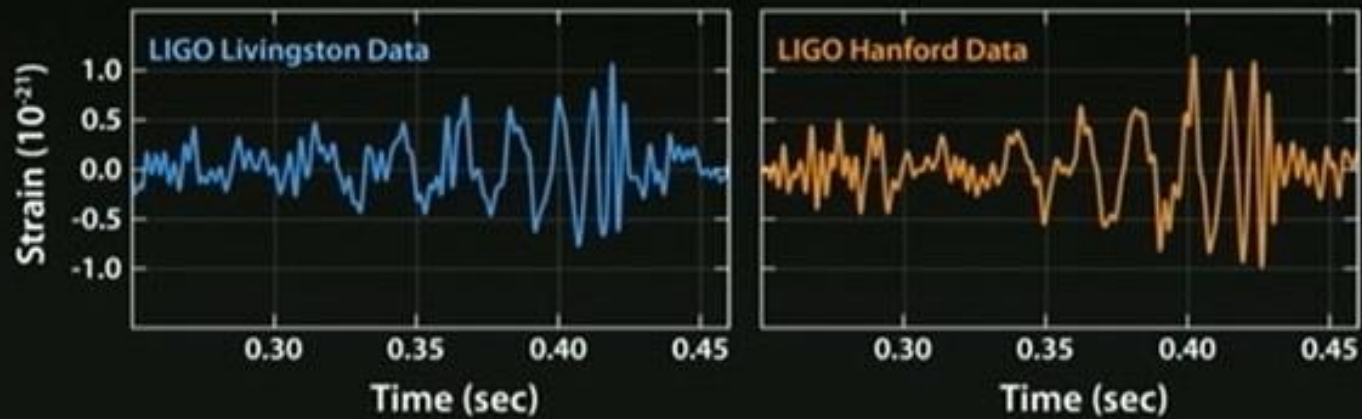
Zrkadlá visia na 4-stupňovom kyvadlovom závесе



Celá paleta seismických izolátorov



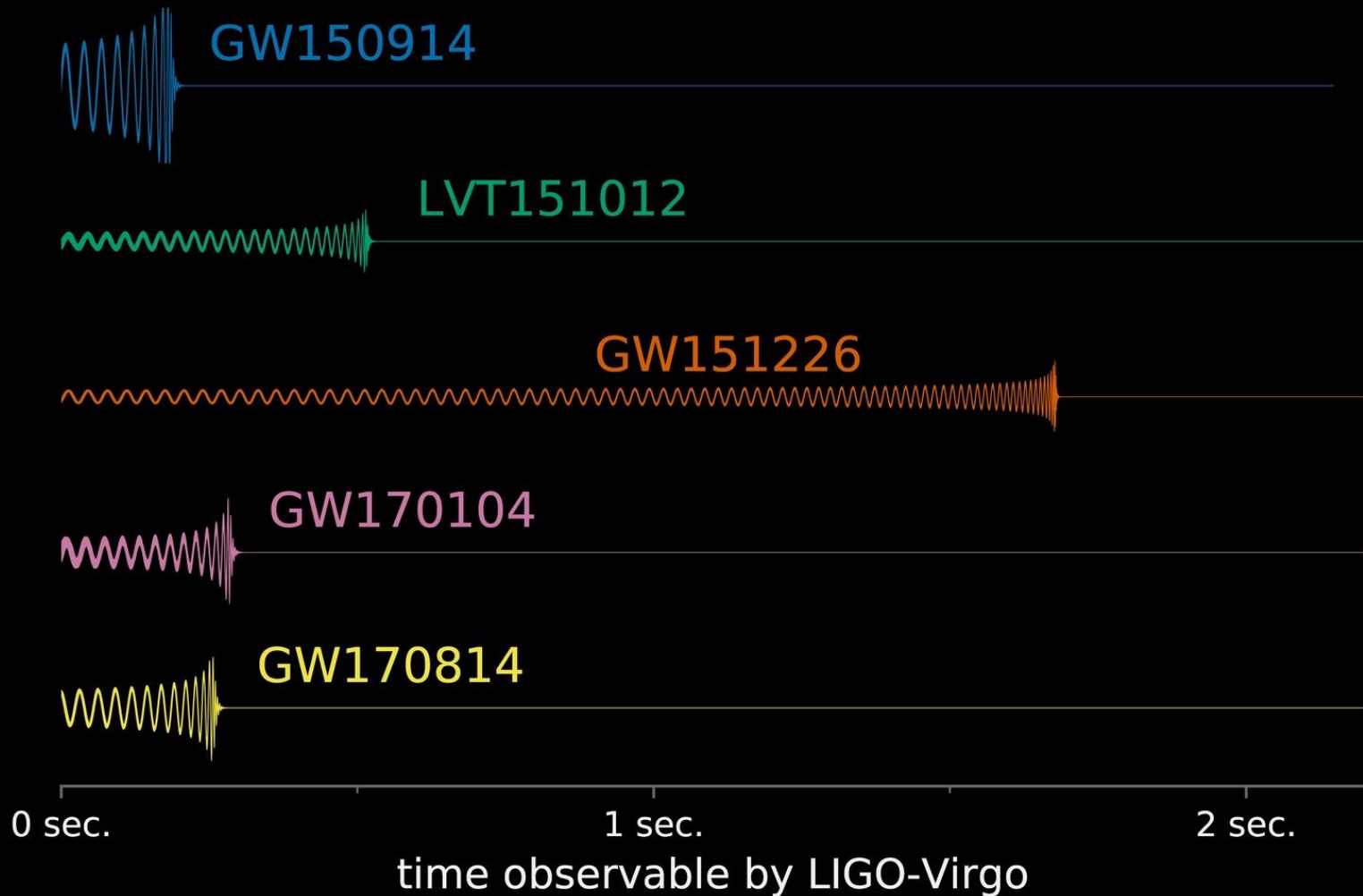
GW150914 - Prvý zachytený signál zrážky dvoch čiernych dier



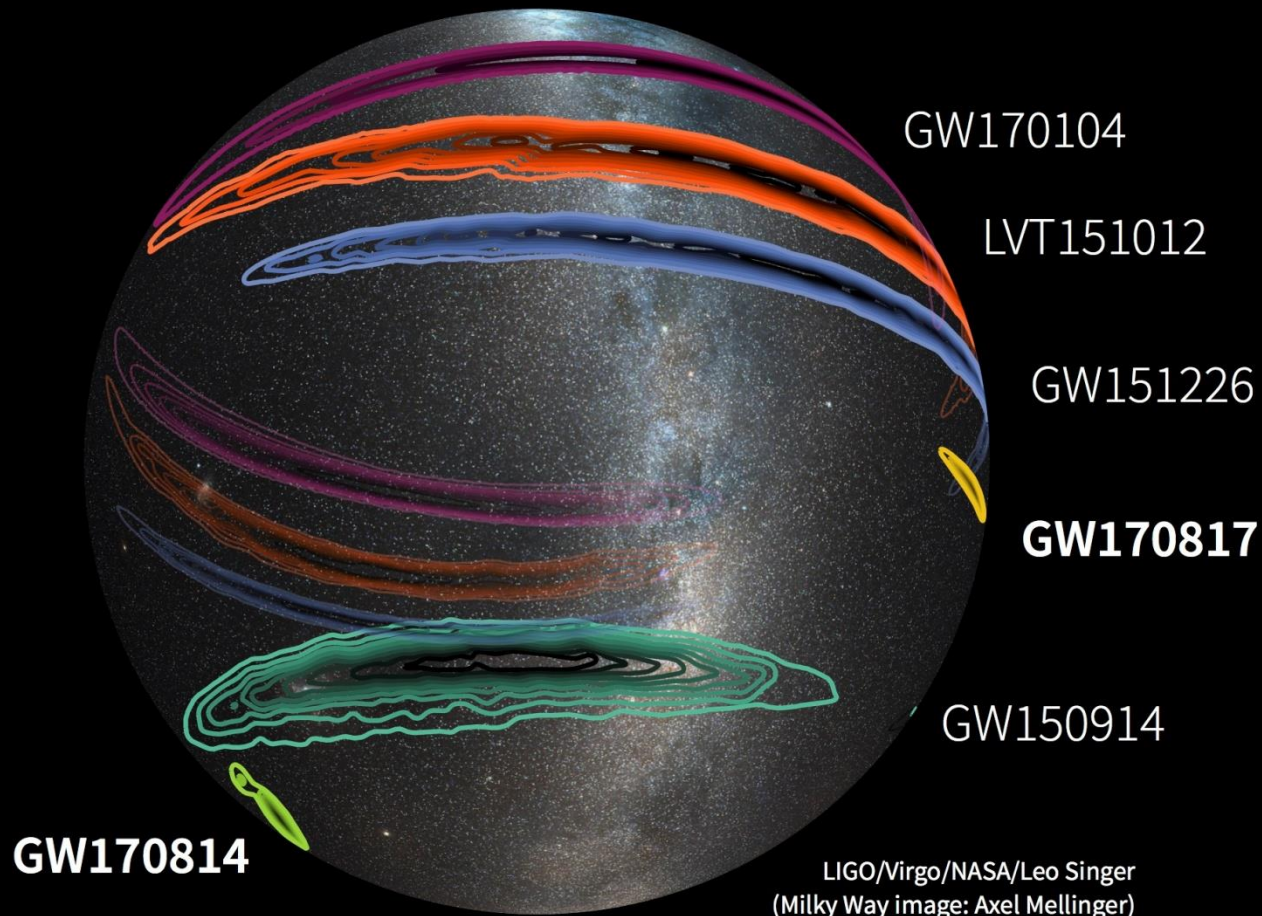
V Avguste 2017 sa pridal 3. detektor
VIRGO v Taliansku



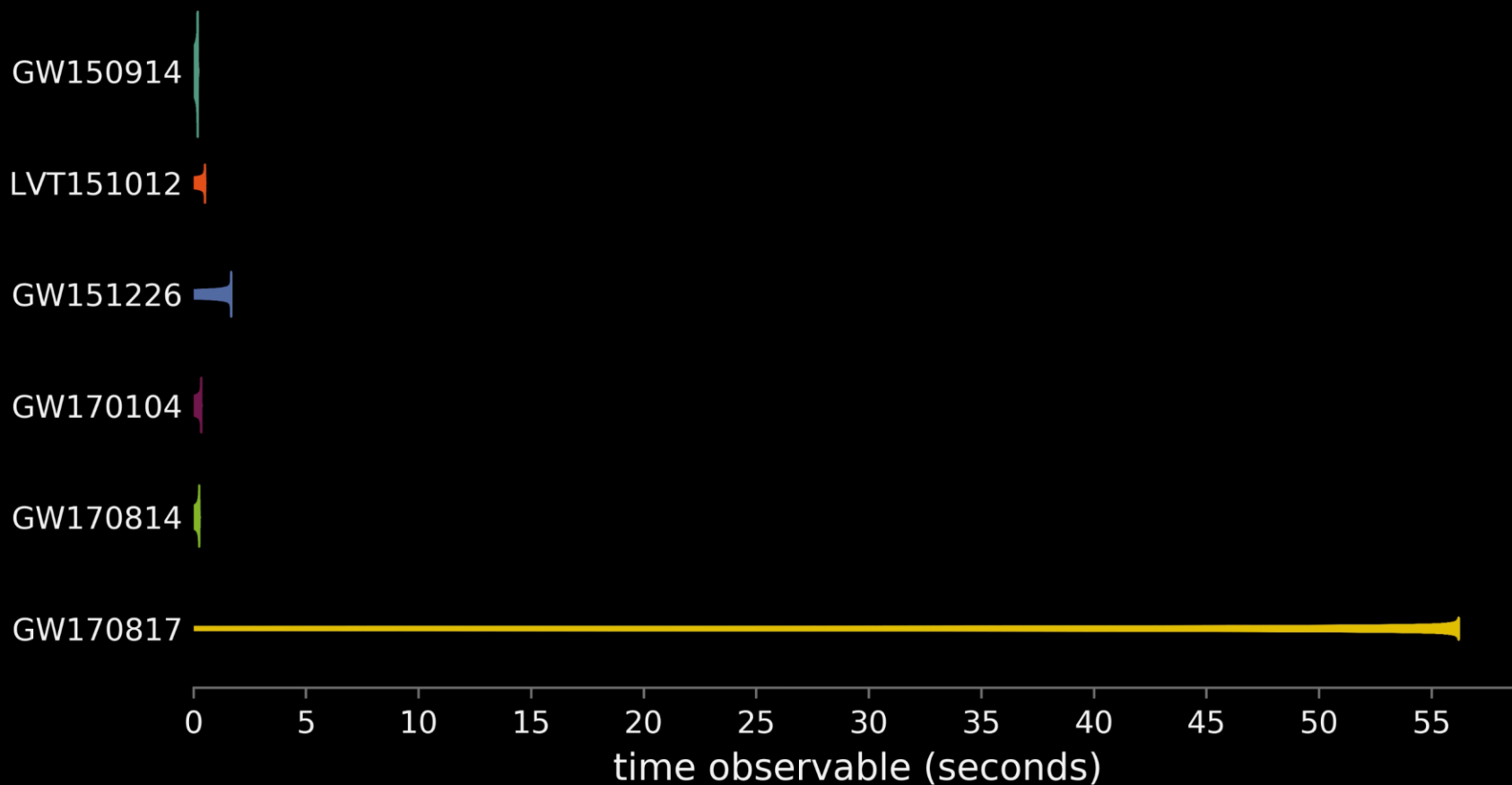
5 zrážok čiernych dier



Presnejšia lokalizácia na oblohe



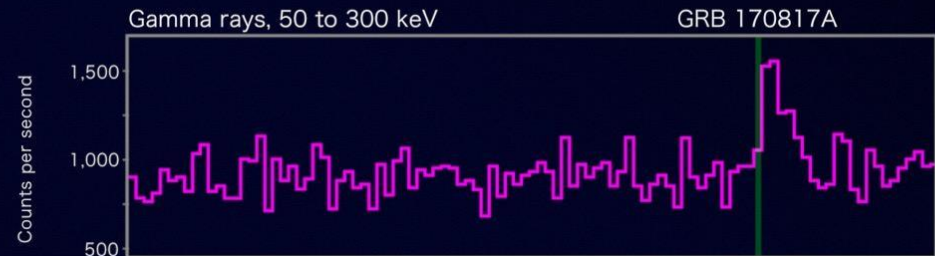
Prvé pozorovanie zrážky dvoch neutrónových hviezd



Začiatok “Multimessengerovej” Astronómie

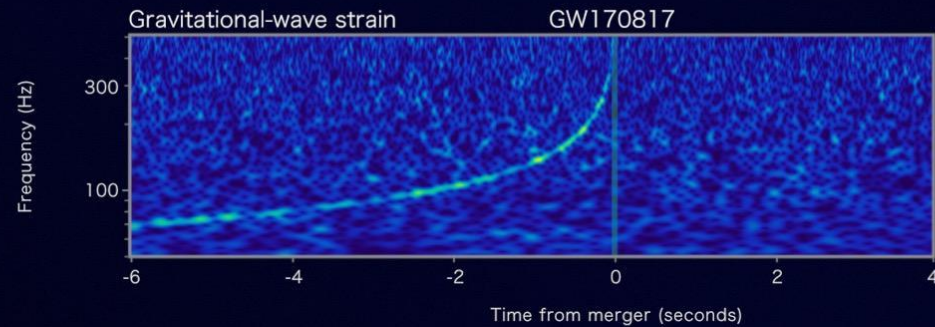
Fermi

Reported 16 seconds after detection



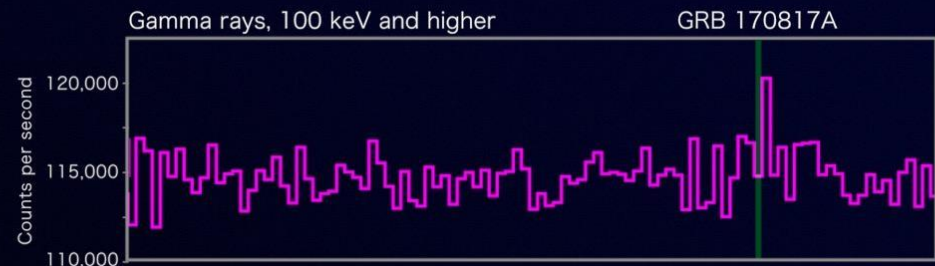
LIGO-Virgo

Reported 27 minutes after detection



INTEGRAL

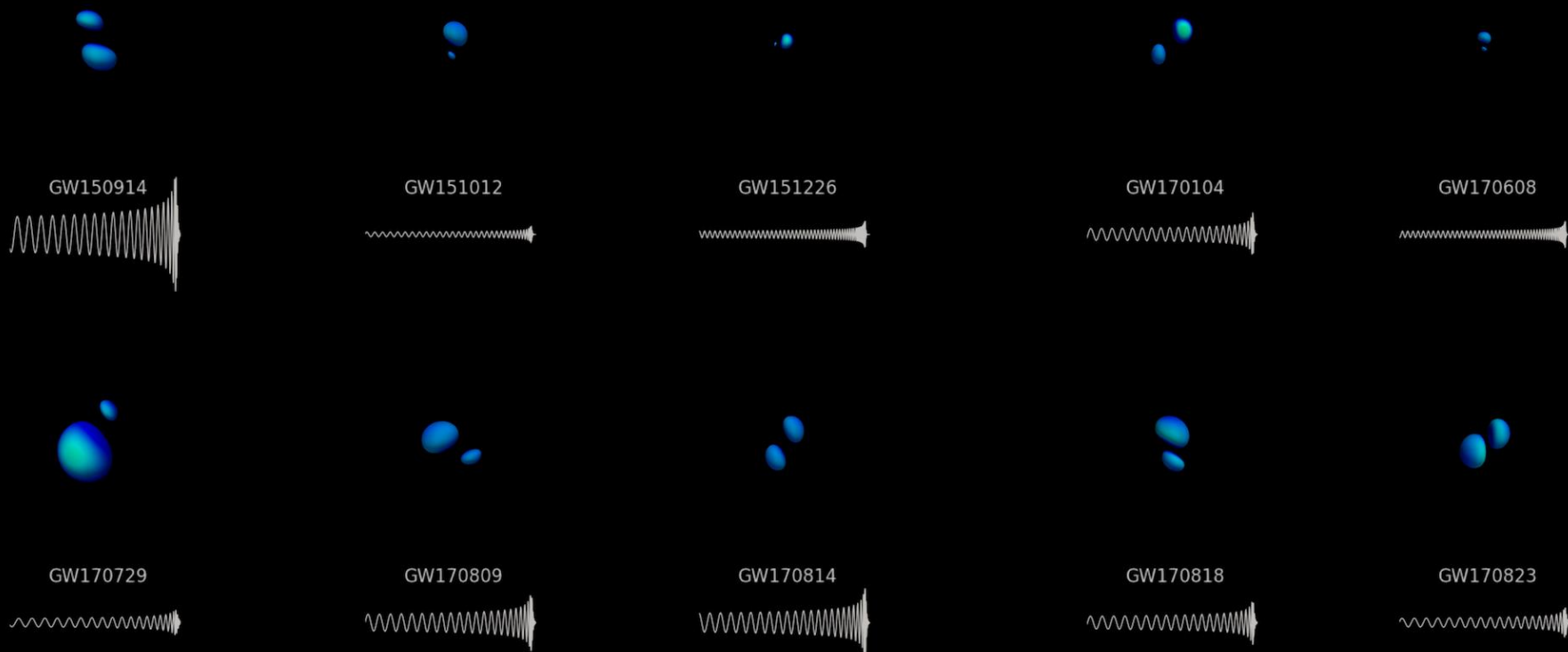
Reported 66 minutes after detection



Svetová sieť GW + EM observatorií



Po reanalýze dát celkovo 10 BH-BH



Masses in the Stellar Graveyard

in Solar Masses

