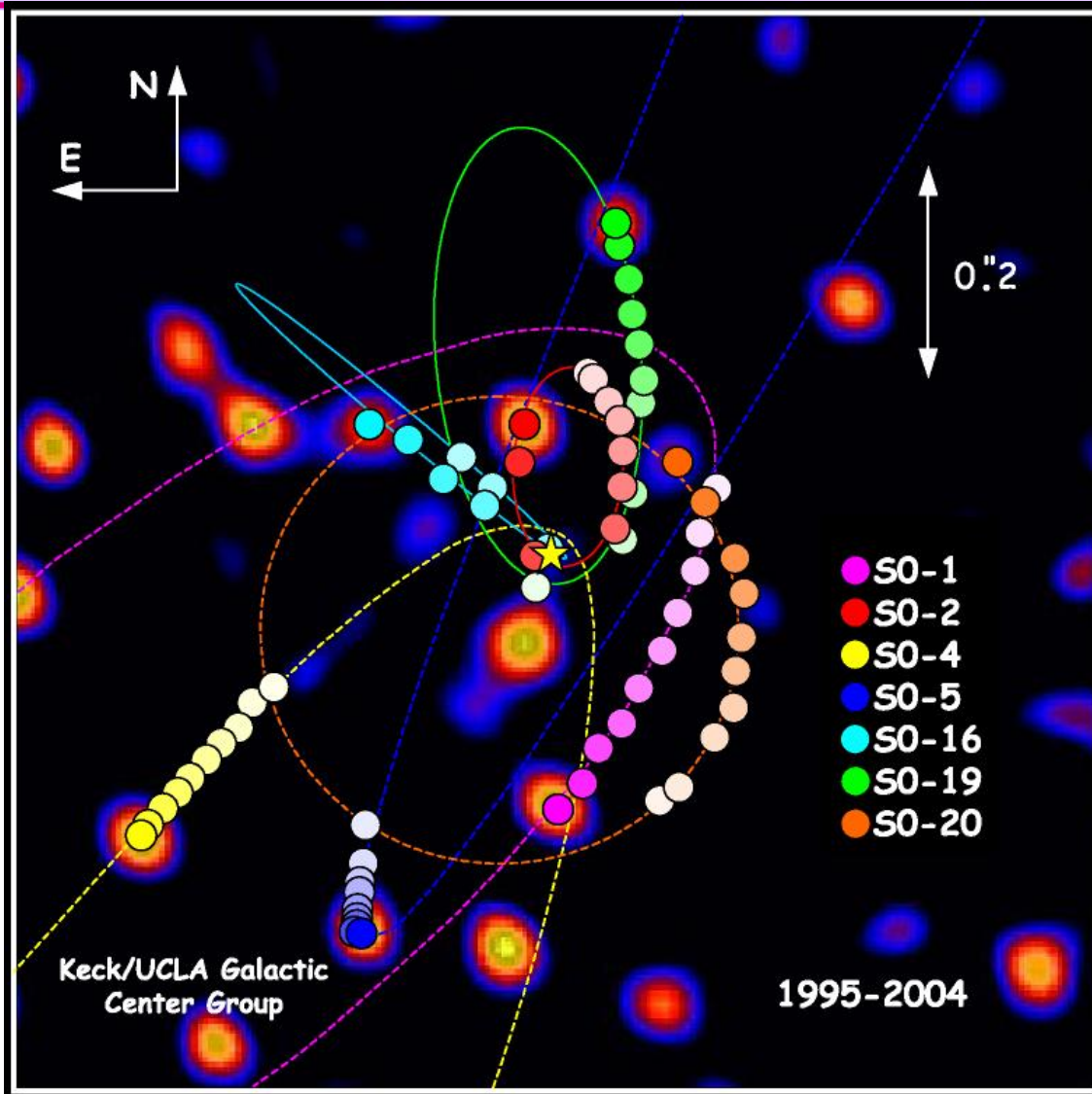


Black holes, Einstein, and space-time ripples

Peter R. Saulson
Syracuse University
Spokesperson, LIGO Scientific Collaboration

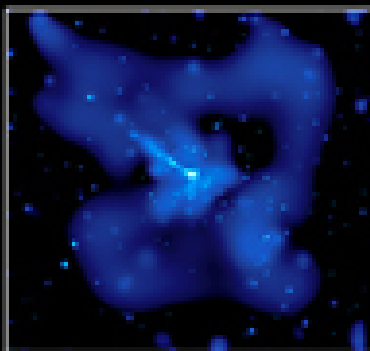
Black Hole at the center of the Galaxy



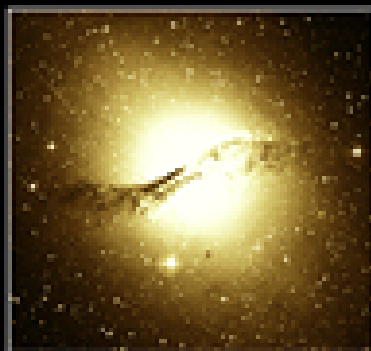
Centaurus A

Active
Galactic
Nucleus

=
Giant
Black Hole?



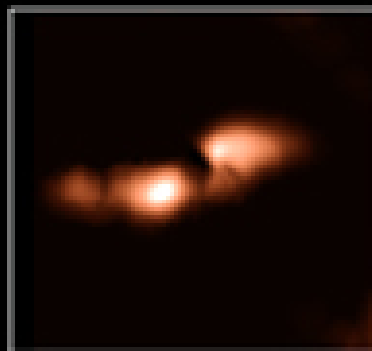
CHANDRA X-RAY



DSS OPTICAL

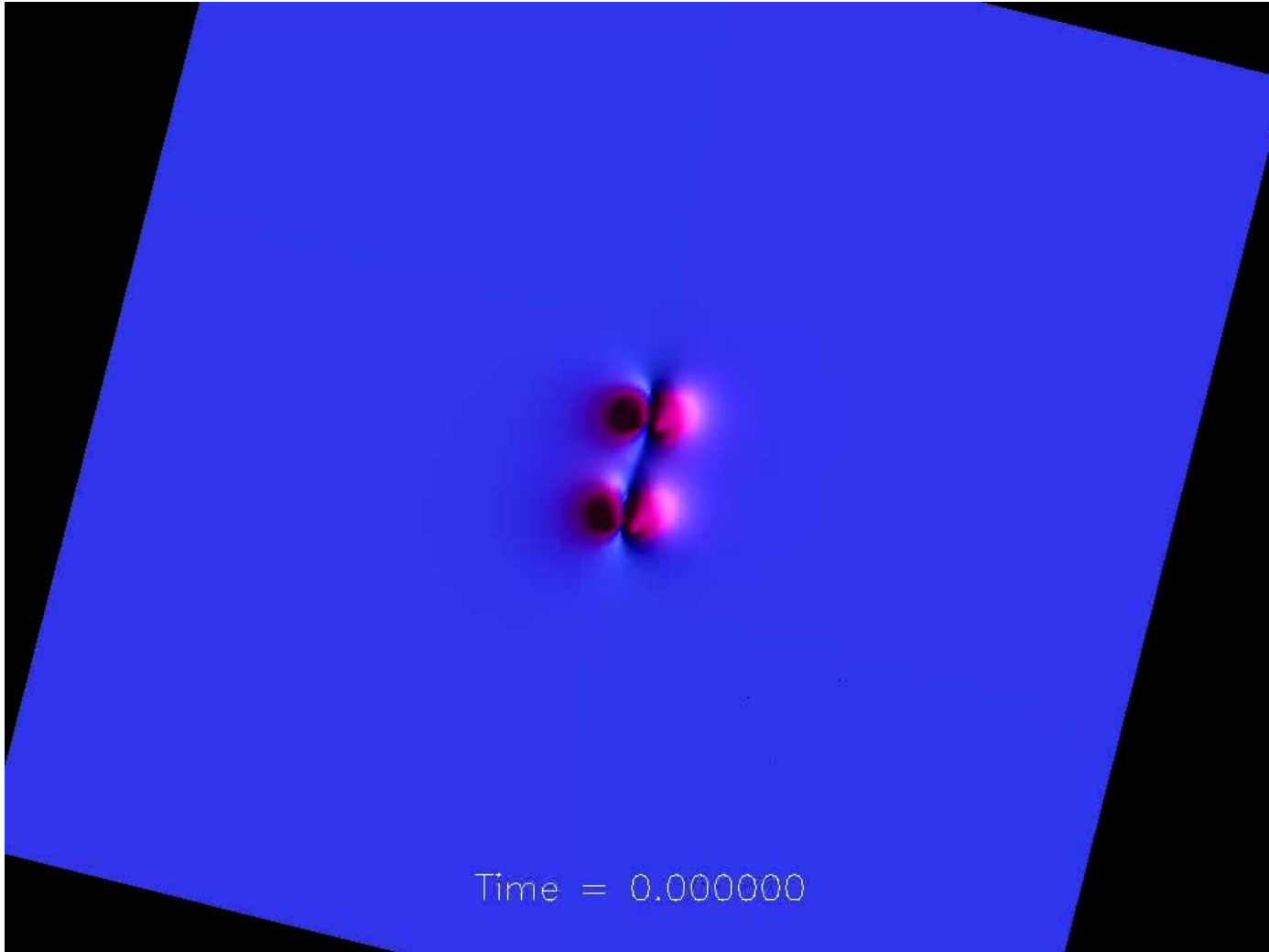


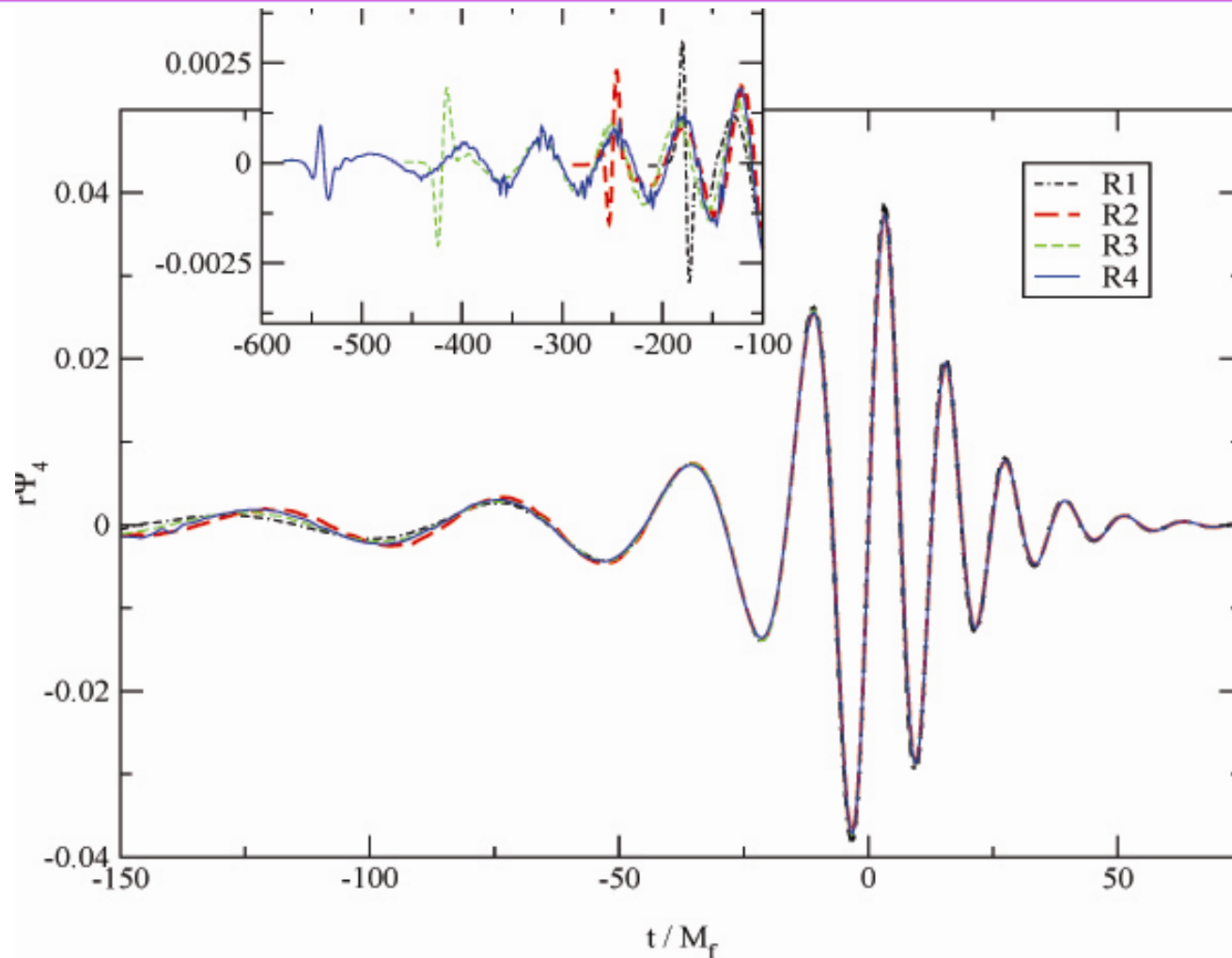
NRAD RADIO
CONTINUUM



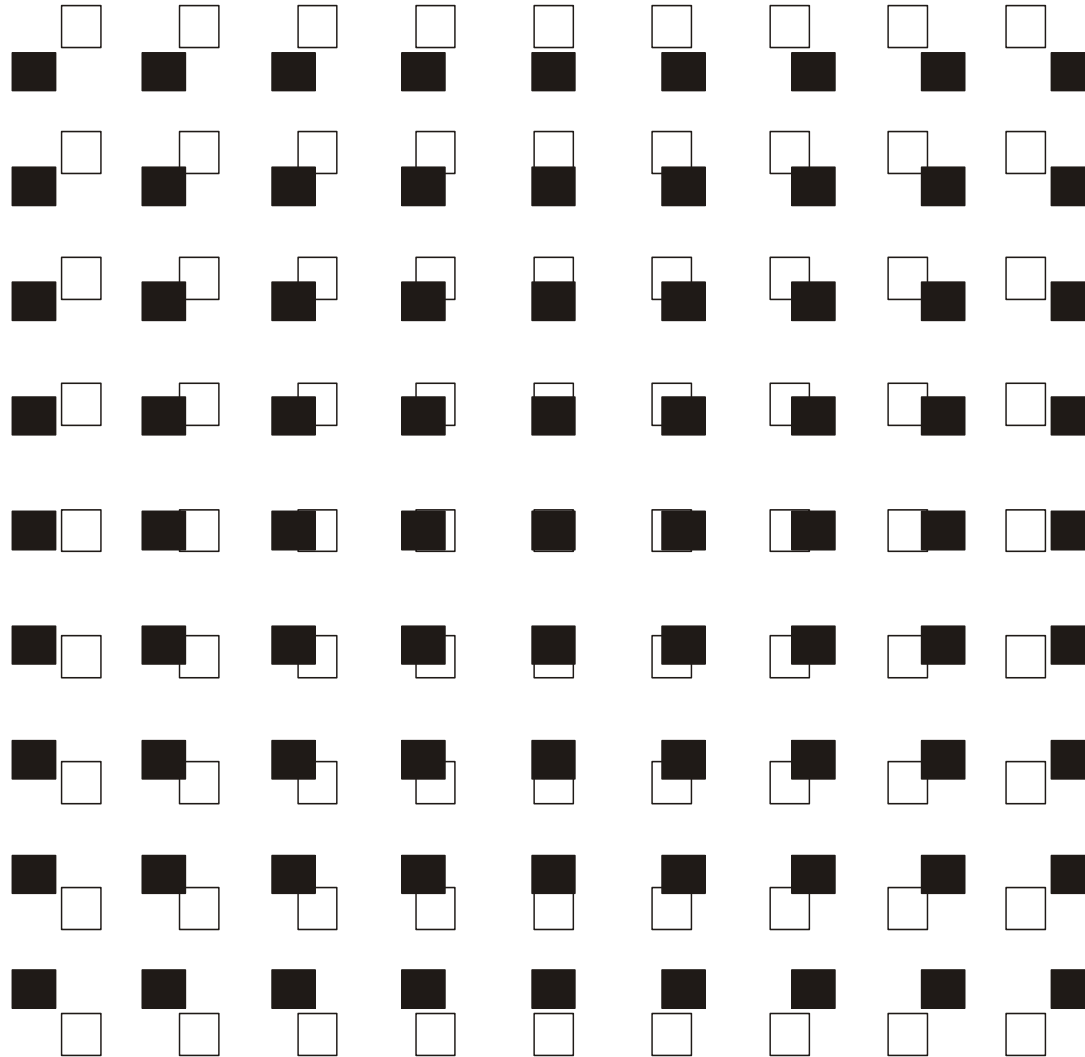
NRAD RADIO
(21-CM)

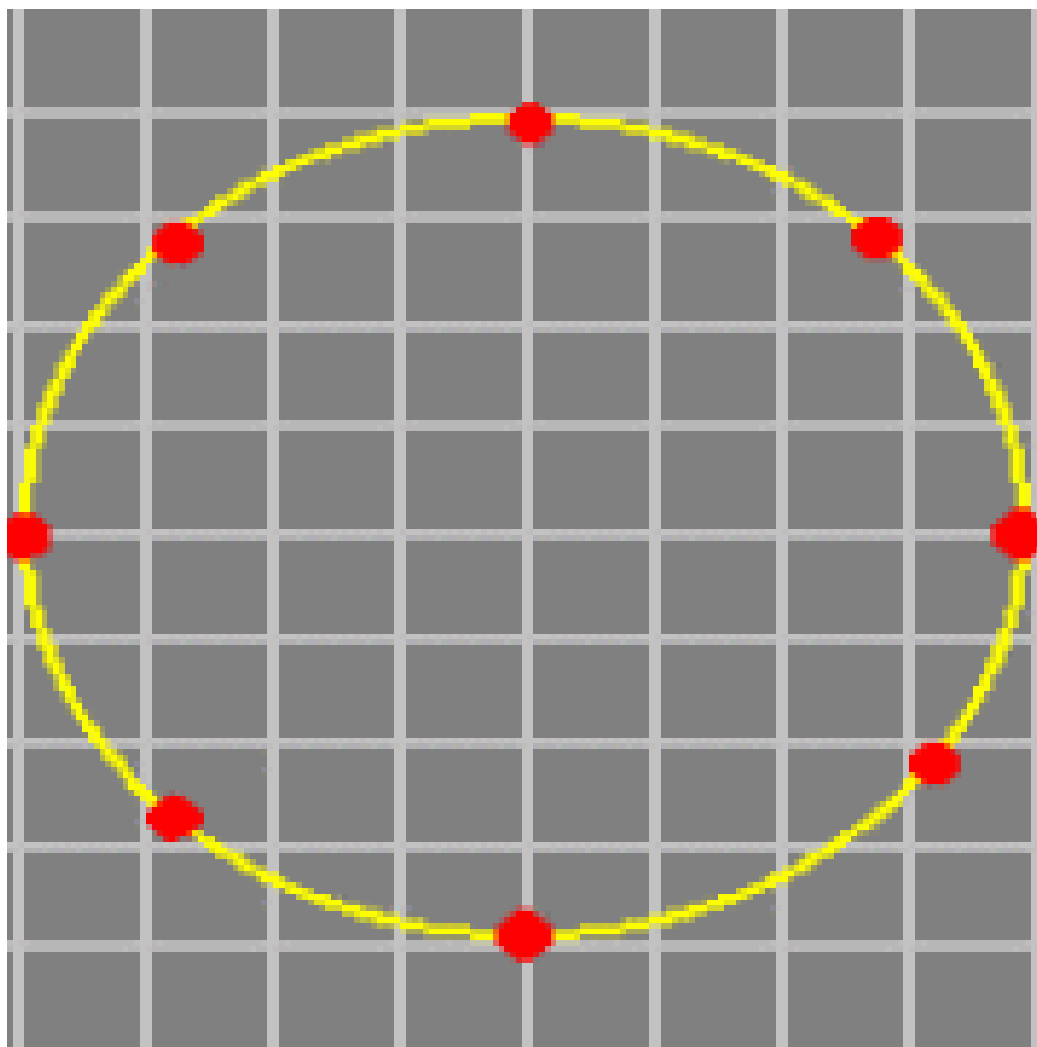
Two black holes collide (simulation)



Black hole coalescence
gravitational waveform

A gravitational wave meets some test masses





More simply ...







Initial LIGO and Advanced LIGO

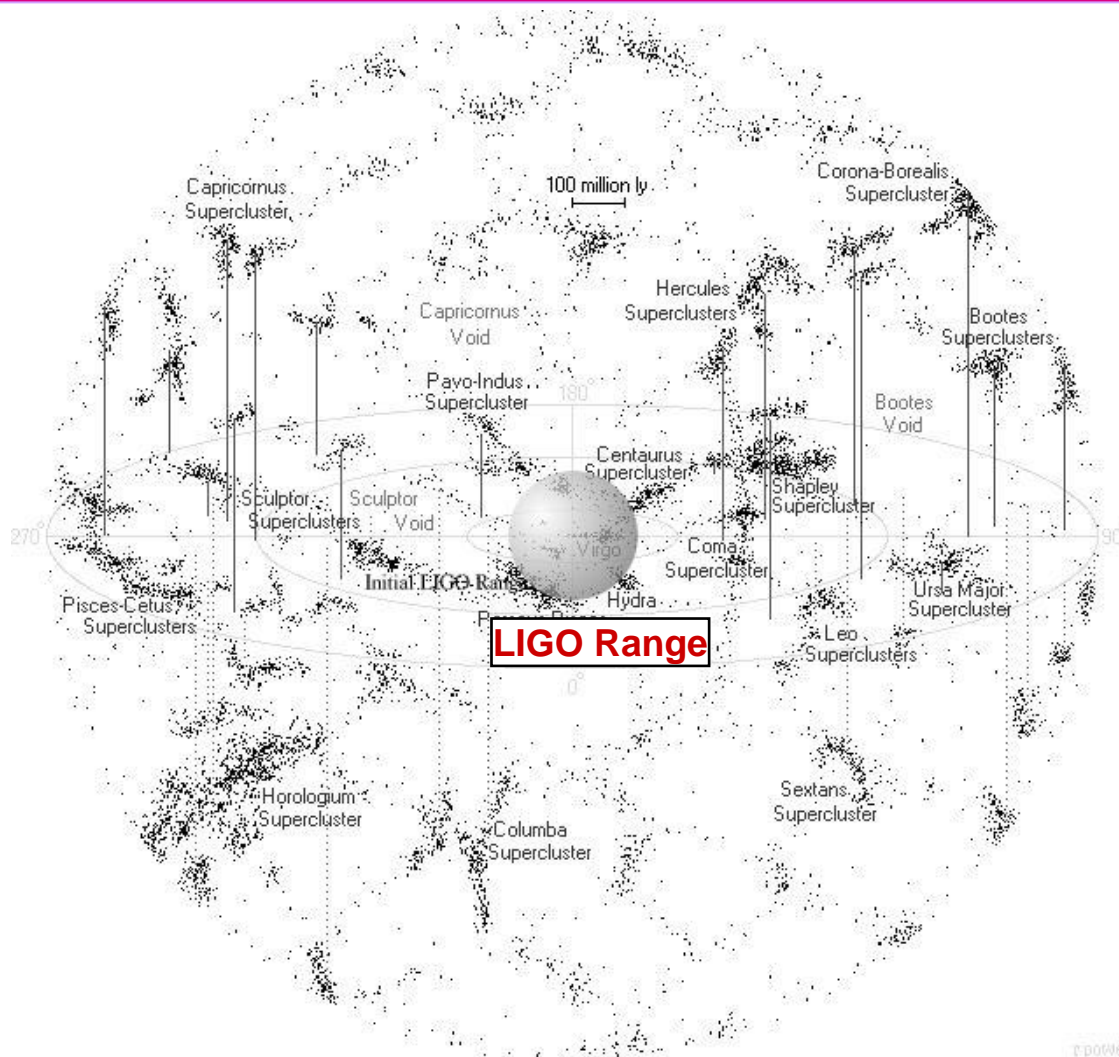
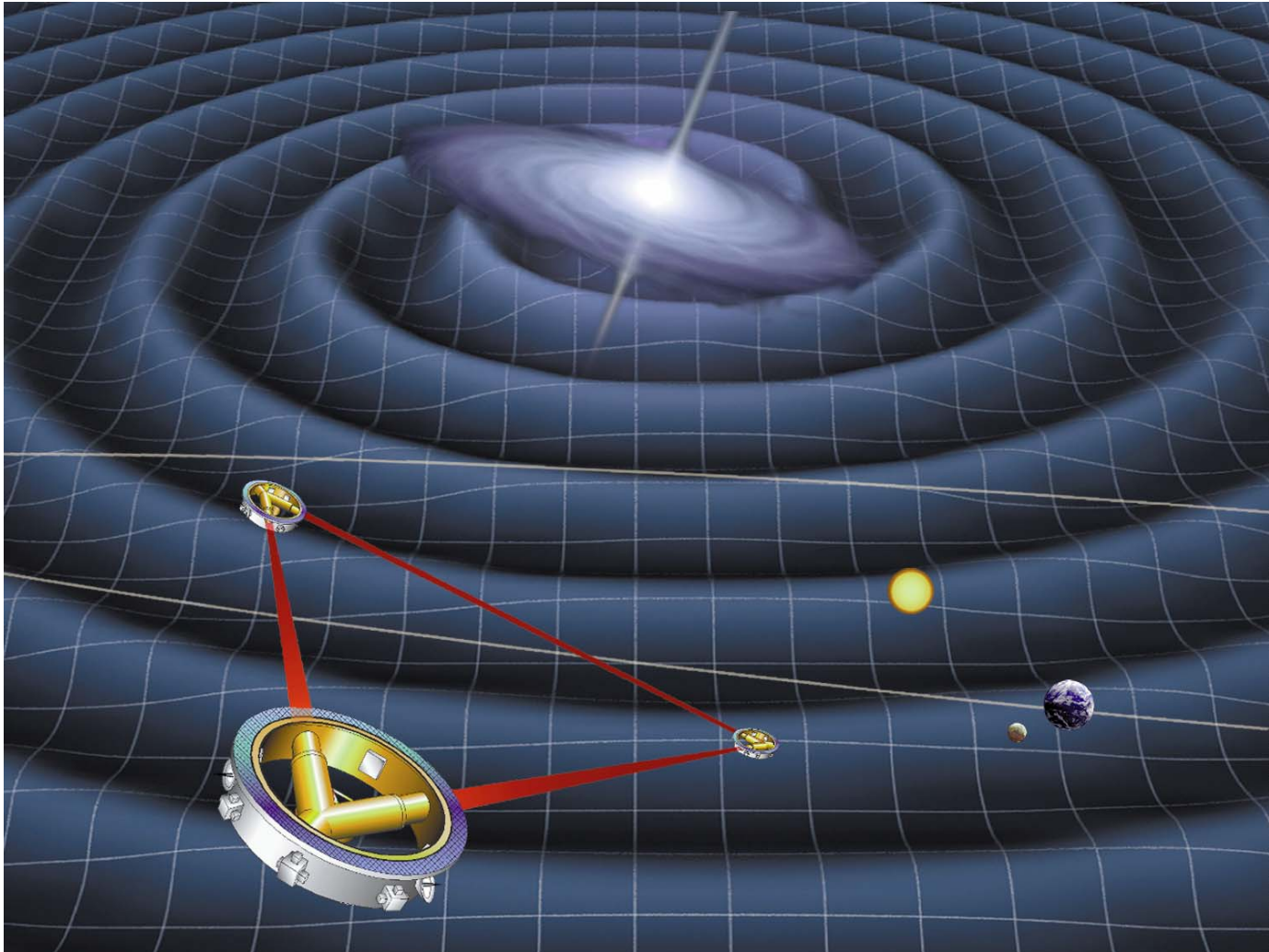
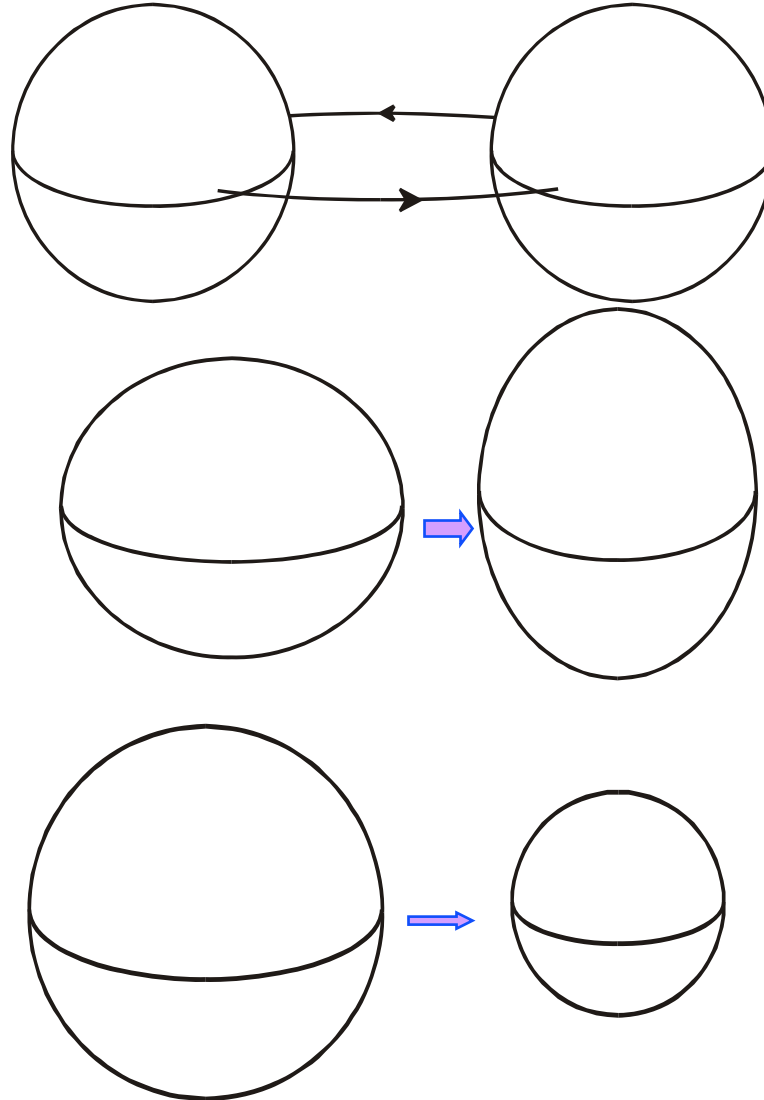
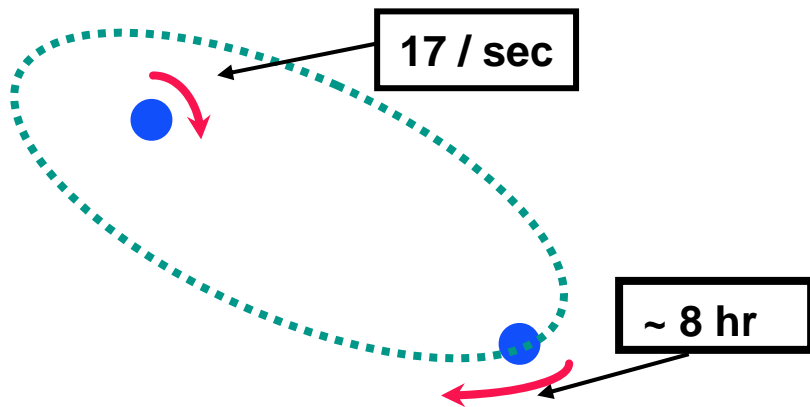


Image: R. Powell

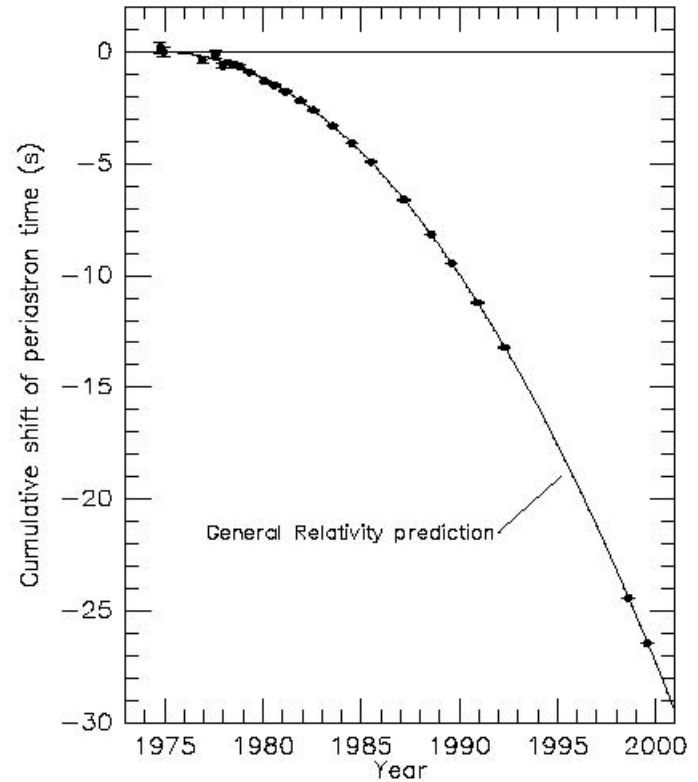




Binary pulsar



Comparison between observations of the binary pulsar PSR1913+16, and the prediction of general relativity based on loss of orbital energy via gravitational waves



From J. H. Taylor and J. M. Weisberg, unpublished (2000)

Binary pulsar as seen in gravitational waves

