

LIGO: Tri-Cities Newest Science Facility

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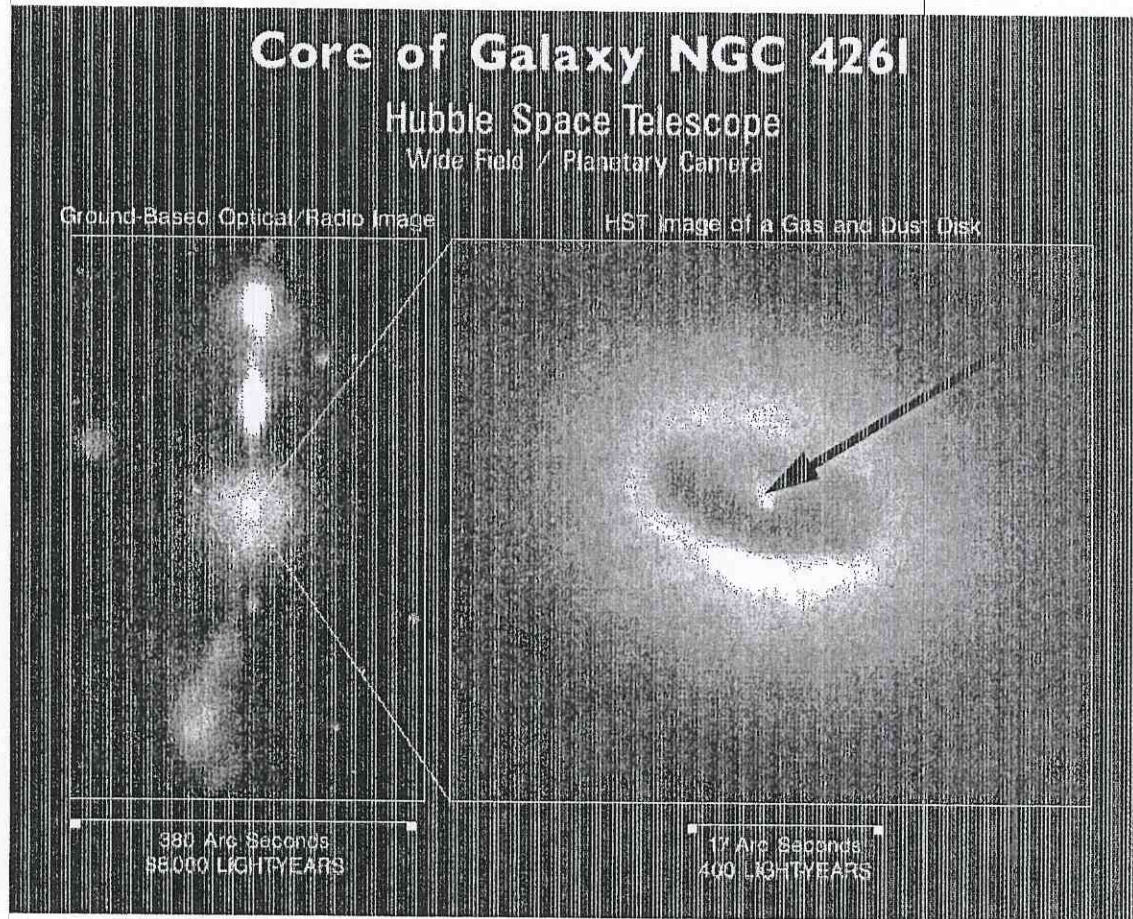
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LIGO Will Give Us an Entirely New Way to Experience the Universe

- For most of history, astronomy has used various kinds of “light”, made up of electric and magnetic forces
- We now know that only about 1/10 of the matter in the universe can be seen this way
- LIGO will detect the underlying disturbances created by violent motions of matter, using the force of gravity
- LIGO will provide a new “sense” to look for:
 - >>vibrations of black holes
 - >>colliding or collapsing stars
 - >>motions of burnt-out cores of stars
 - >>echoes from the birth of the universe



Example: Does a Black Hole Exist Here?



Position of Possible
Black Hole

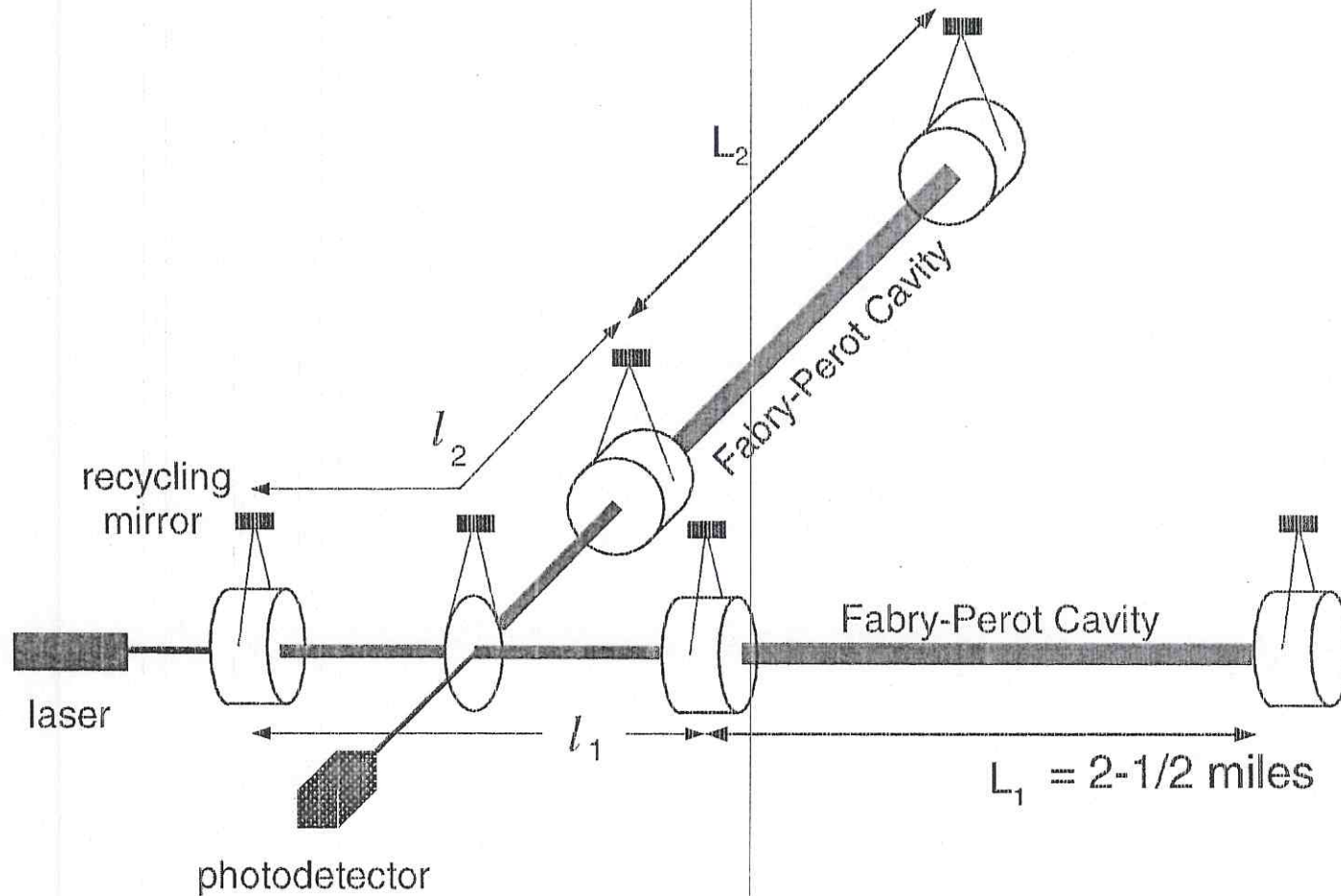
The immense tug of gravity from the black hole is thought to be the engine powering the glow of surrounding gas atoms and driving jets deep into space.

Credit: HST graphic by NASA
Radio Image by NRAO.

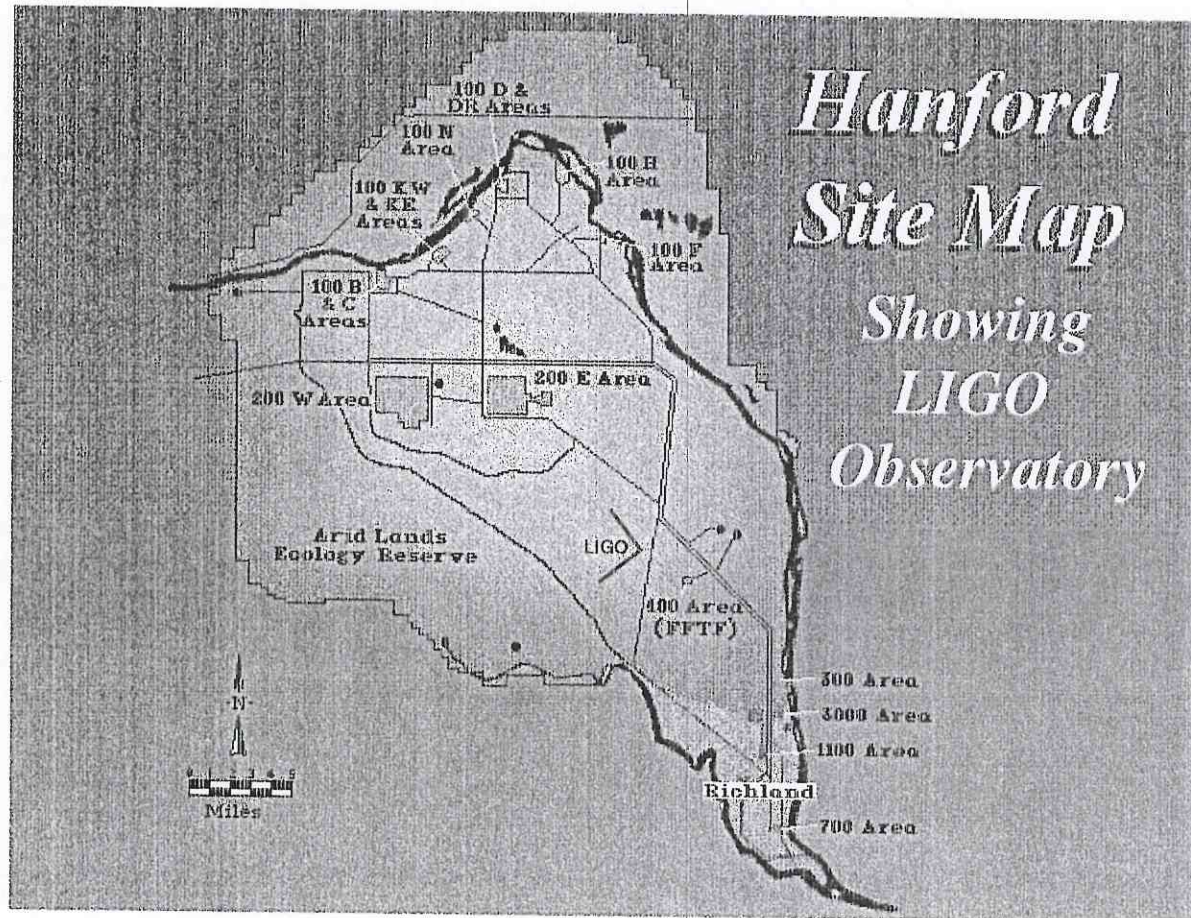
Artist's Rendering of LIGO in Operation



LIGO Laser Interferometer



Location of LIGO at Hanford, WA



Aerial Photo of Hanford Site Near Completion of Rough Grading

LIGO Operations Plan

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- Scientific operations begin with installation of detector hardware at completion of facilities construction and shakedown
 - Detector installation, integration and shakedown at both sites will take about two years
 - Around-the-clock searches for gravitational waves begin with detectors at both Hanford and Livingston in 2000
 - Approximately 25 resident observatory staff at Hanford, plus a comparable number of visiting scientists
 - Approximately 175 scientists world-wide are currently planning research involvement in LIGO
 - Future expansion is anticipated at both observatory sites

