

Gravitational Wave Detector Sites

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Locations and orientations of current and proposed laser-interferometric gravitational wave detectors are given in tabular form.

I. INTRODUCTION

Gravitational waves are one of the most robust predictions of Einstein's general theory of relativity, but have only been observed indirectly, as the dominant energy-loss mechanism in the binary pulsar PSR1913+16. A new generation of laser-interferometric gravitational wave detectors is currently under construction, which should permit direct observations of these waves. The analysis of signals from these detectors, and the pioneering work on data analysis from existing "prototype" detectors, requires correlating signals from different sites in order to extract the most information. Such analysis requires precise knowledge of the locations and orientations of the detectors. This paper presents a table of this data for the current and proposed earth-based laser-interferometric detectors.

II. SITE AND ORIENTATION DATA

Each line of Table I contains information about one detector. The data contained in each column is:

1. The name of the detector or project.
2. The name of the geographical site or location.
3. A nominal "date of operation" (either past, current, or anticipated).
4. The arm length, in meters.
5. The location of the central (corner) station on the earth's surface. The latitude is measured in degrees North from the equator, and the longitude is measured in degrees West of Greenwich, England.
6. The orientation of the first arm, measured in degrees counter-clockwise from true North.
7. The orientation of the second arm, measured in degrees counter-clockwise from true North.
8. The source of information about the location and orientation.

III. NOTES

1. The orientation of the Glasgow detector was changed in 1995, hence both the earlier and current orientations are given.
2. The LIGO site in Hanford Washington will have both 2 km and 4 km arms contained in the same vacuum tube.
3. The orientation angles given for the GEO-600 site are *not* in error; for practical reasons the arms are separated by 94.33°.

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TABLE I. Site and orientation of earth-based interferometric gravitational-wave detectors.

<i>Project</i>	<i>Location</i>	<i>Year</i>	<i>Length (m)</i>	<i>Corner Location</i>	<i>Arm 1</i>	<i>Arm 2</i>	<i>Source</i>
Glasgow	Glasgow, GBR	1977	10	55.87°N 4.28°W	77.0°	167.0°	[1]
CIT	Pasadena, CA, USA	1980	40	34.17°N 118.13°W	180.0°	270.0°	[2]
MPQ	Garching, GER	1983	30	48.24°N −11.68°W	329°	239°	[1]
ISAS-100	Tokyo, JPN	1986	100	35.57°N −139.47°W	42.0°	135.0°	[3]
TAMA-20	Tokyo, JPN	1991	20	35.68°N −139.54°W	45.0°	315.0°	[4]
Glasgow	Glasgow, GBR	1995	10	55.87°N 4.28°W	62.0°	152.0°	[5]
TAMA-300	Tokyo, JPN	1998	300	35.68°N −139.54°W	90.0°	180.0°	[4]
GEO-600	Hannover, GER	1999	600	52.25°N −9.81°W	25.94°	291.61°	[1]
VIRGO	Pisa, ITA	2000	3000	43.63°N −10.5°W	71.5°	341.5°	[6]
LIGO	Hanford, WA, USA	2000	4000	46.45°N 119.41°W	36.8°	126.8°	[2]
LIGO	Livingston, LA, USA	2000	4000	30.56°N 90.77°W	108.0°	198.0°	[2]