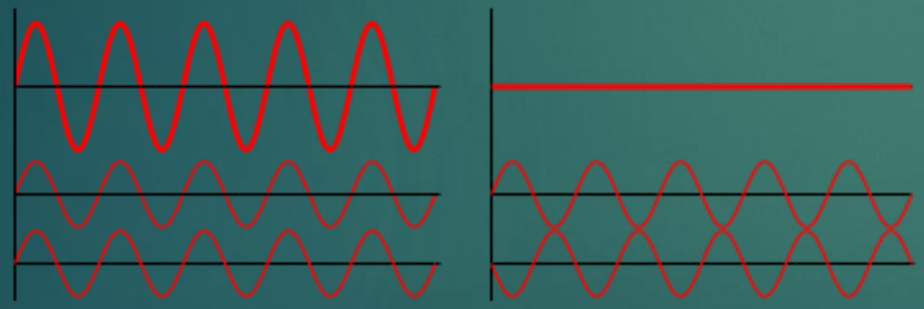
Interferometry

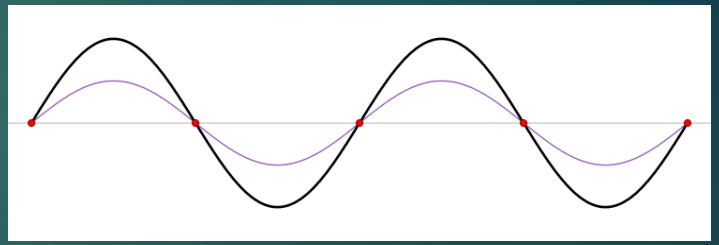
HOW CANNOT WE DETECT GRAVITATIONAL WAVES

What Is Interferometry ?

Interferometry is a family of techniques in which waves, usually electromagnetic, are super position in order to extract information about the waves.



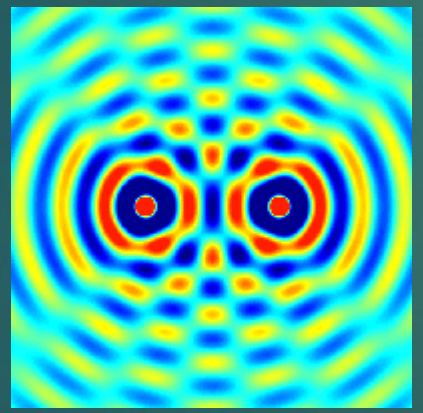
undergo constructive undergo destructive



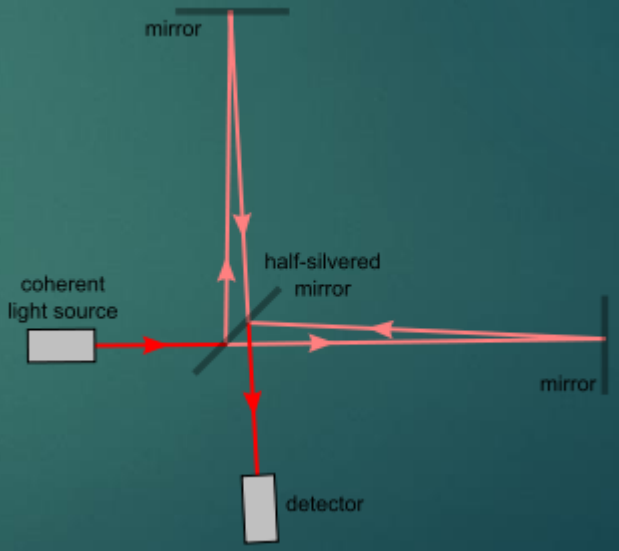
super position

Why We Use Interferometry?

Interferometry are widely used in science and industry for the measurement of small displacement, refractive index of changes and surface irregularities



Interference, girişim

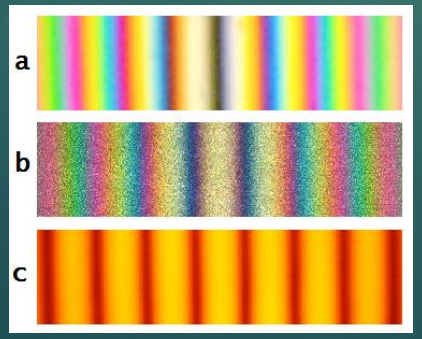


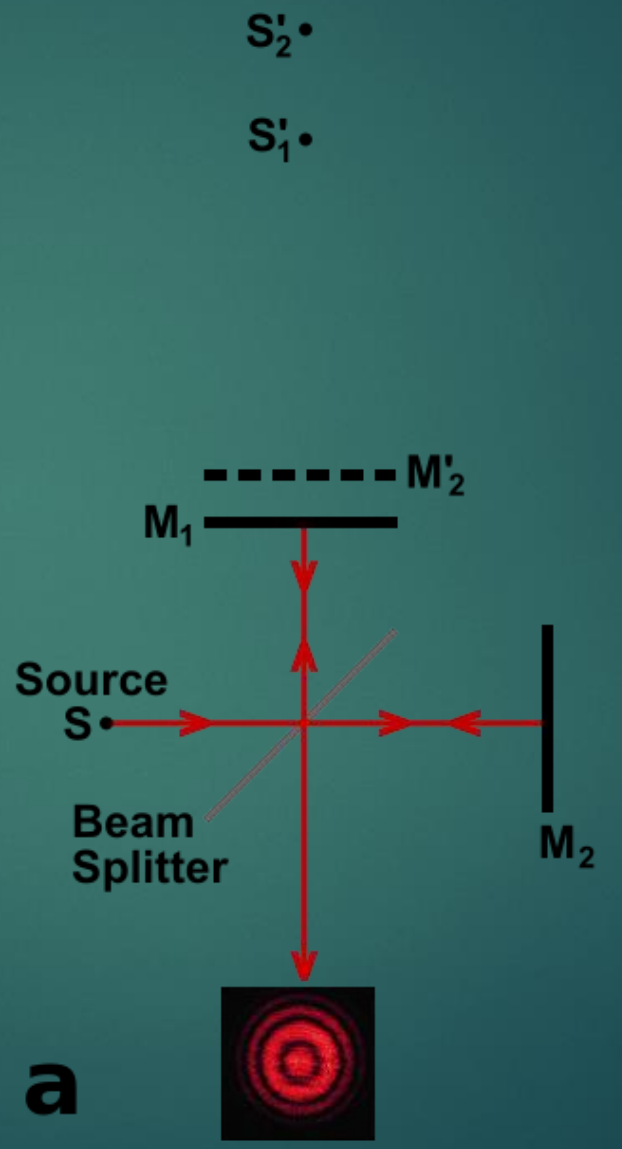
Michelson interferometer

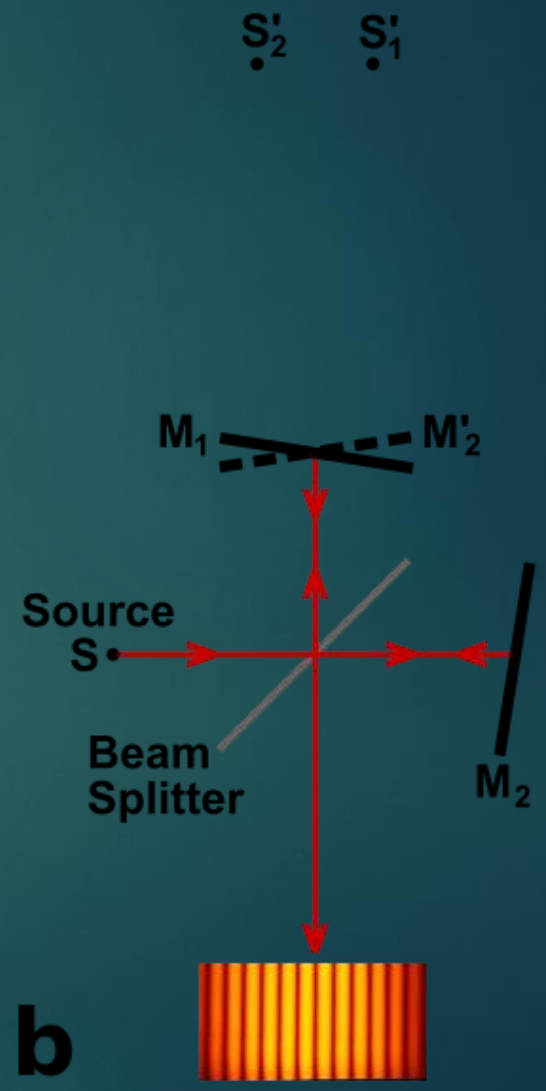
refractive index : Kirilma indisi
Irregularities : Düzensizlikler

What is Interferometer ?

- Interferometry makes use of the principle of superposition to combine waves in a way that will cause the result of their combination to have some meaningful property that is diagnostic of the original state of the waves.



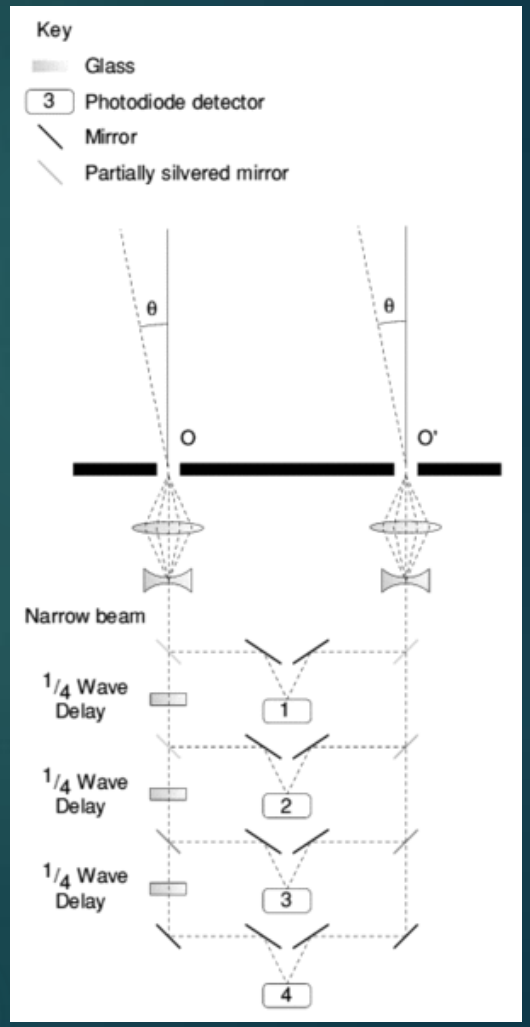




Where We Use Interferometry ?

- An **astronomical interferometer** is an array of telescopes or mirror segments acting together to probe structures with higher resolution by means of interferometry.

Resolution = lambda / diameter of the telescope

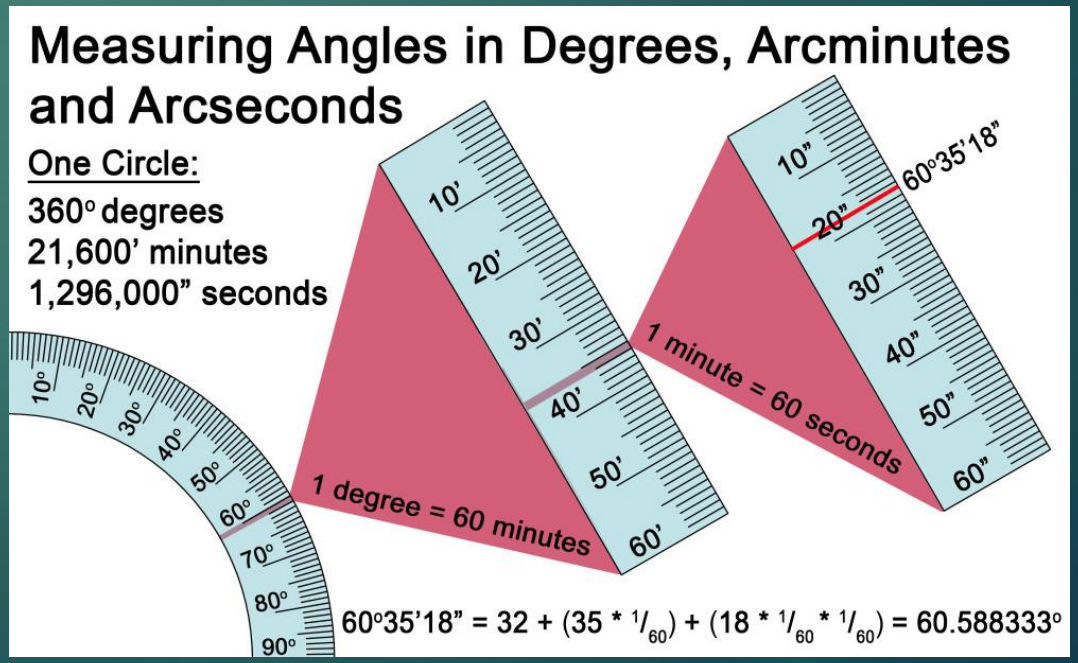


What is Arcsecond ?

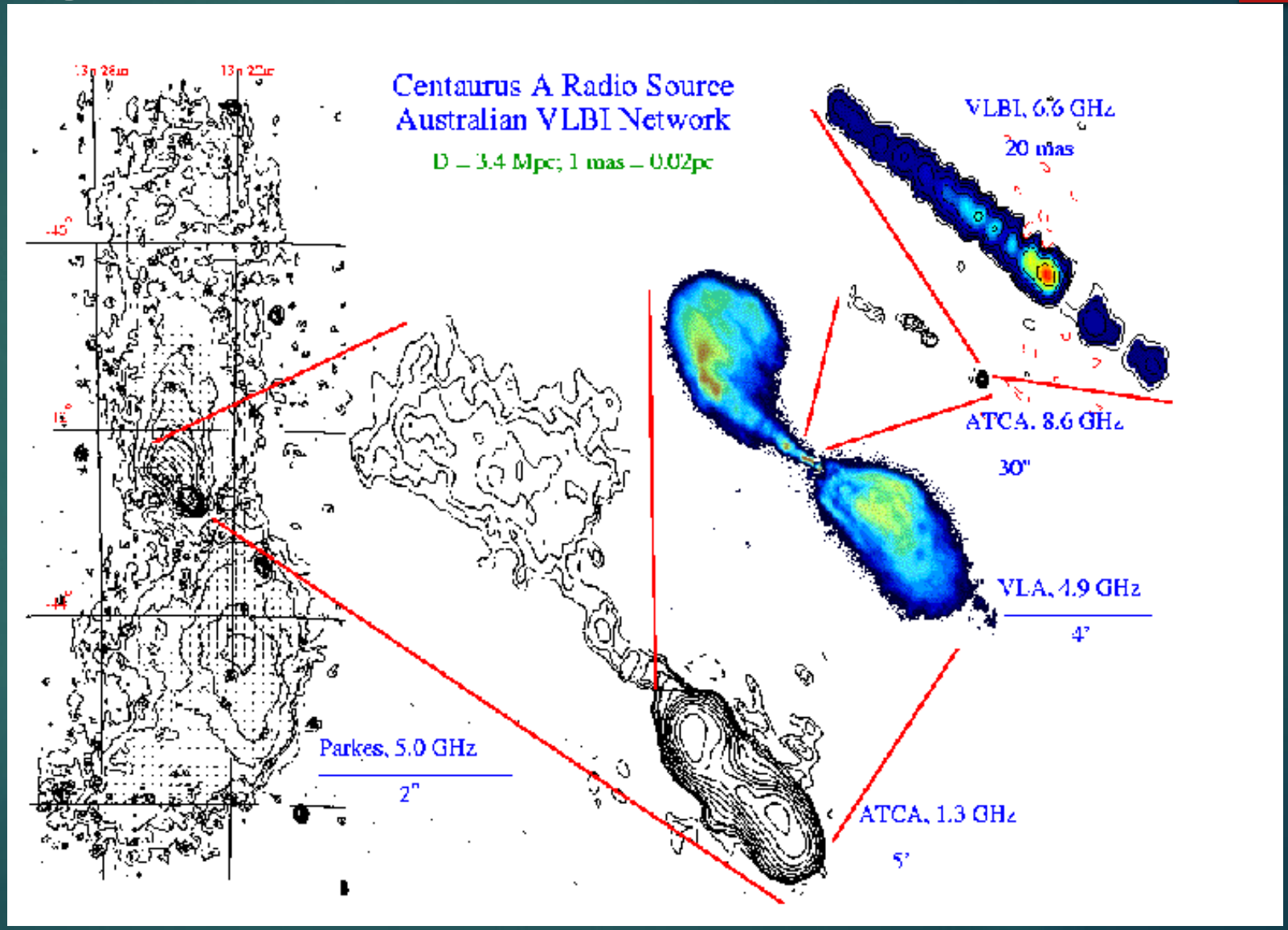
1 degree = 1 / 360 of a circle

1 arcminute = 1/60 of a degree

1 arcsecond = 1/60 of a arcminute = 1/3600 of a degree



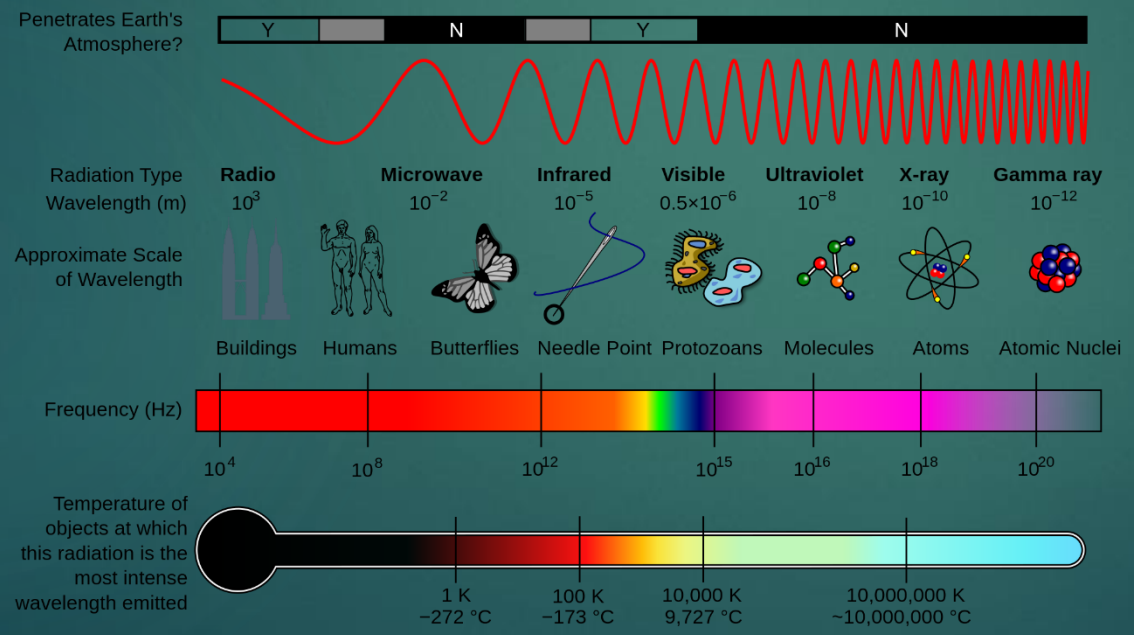
Some Imagination

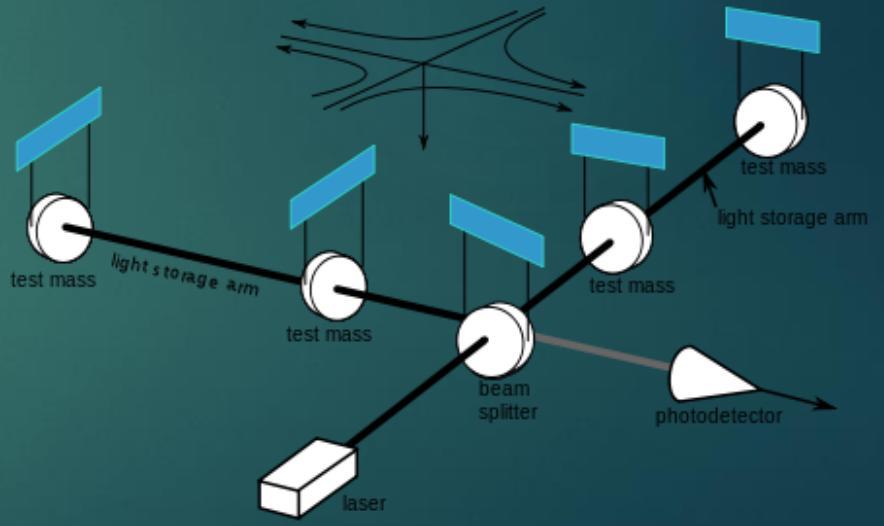


İnterferometry and Gravitational waves

Gravitational waves are perturbations in the curvature of spacetime caused by accelerated masses

Kind of Amplitude(size) of wave approximate 10^{-20} Hz (because of time parameter need to be dh/dt)





Perturbations : Sarsım

Thanks for Listening

Hüseyin Yağcı

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