

# General Relativity

**1915:** Einstein generalizes the idea of relativity to non-inertial (accelerating) reference frames.

He realized that:

- Acceleration is equivalent to a gravitational field
- A free-falling objects feels no acceleration (locally).

General Relativity ↔ Gravity

**Equivalence Principle:** We can always choose a reference frame so that locally physics is the same as in the absence of gravity.

The source (charge) of gravity is Energy (generalization of mass). Even zero mass particles (light) feel gravity.

The presence of energy results in changing the geometry of space and time: Curvature is generated.

Einstein's equation is:

**Curvature=Energy**

Since 1922 we know that Newton did not have the whole story.