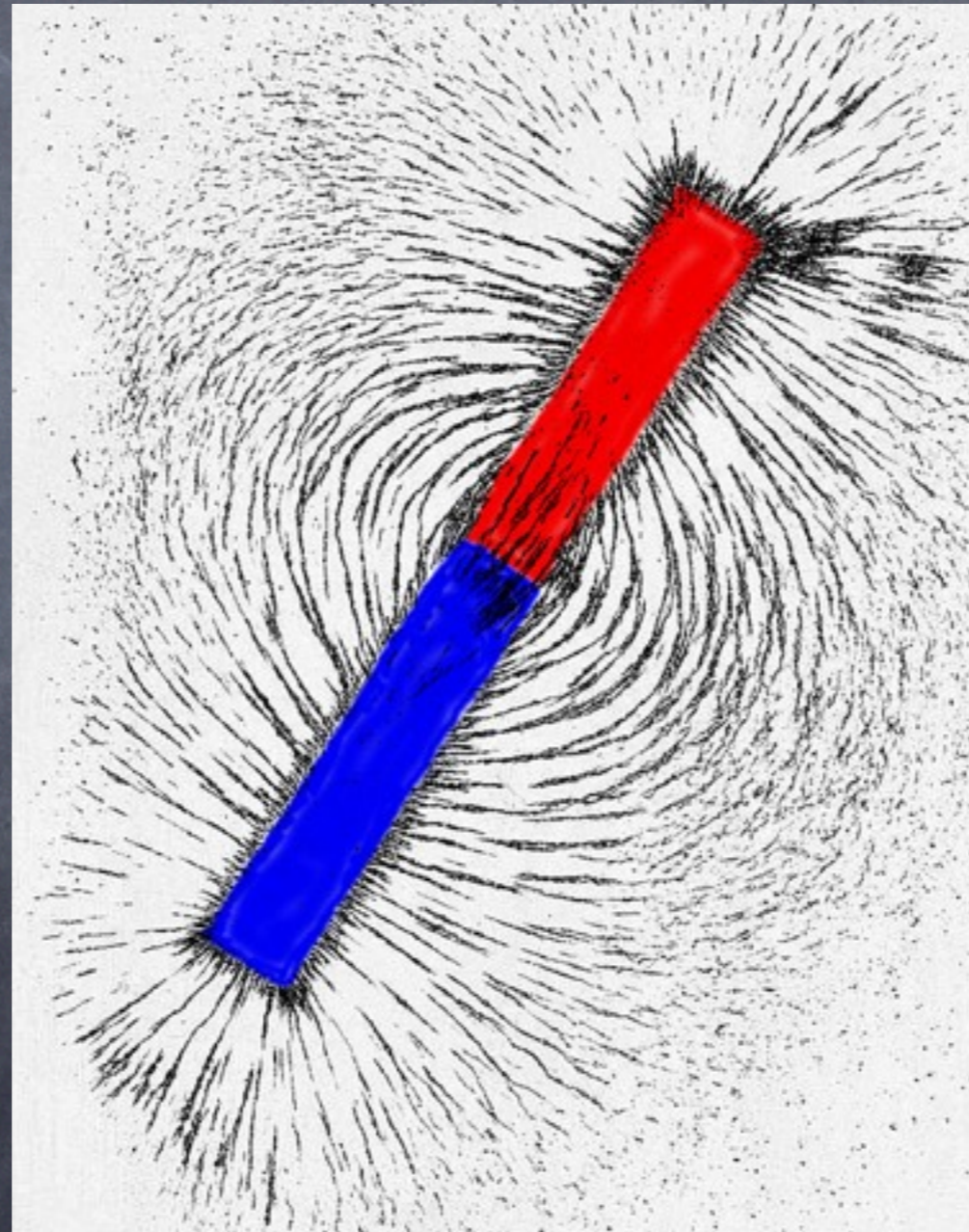
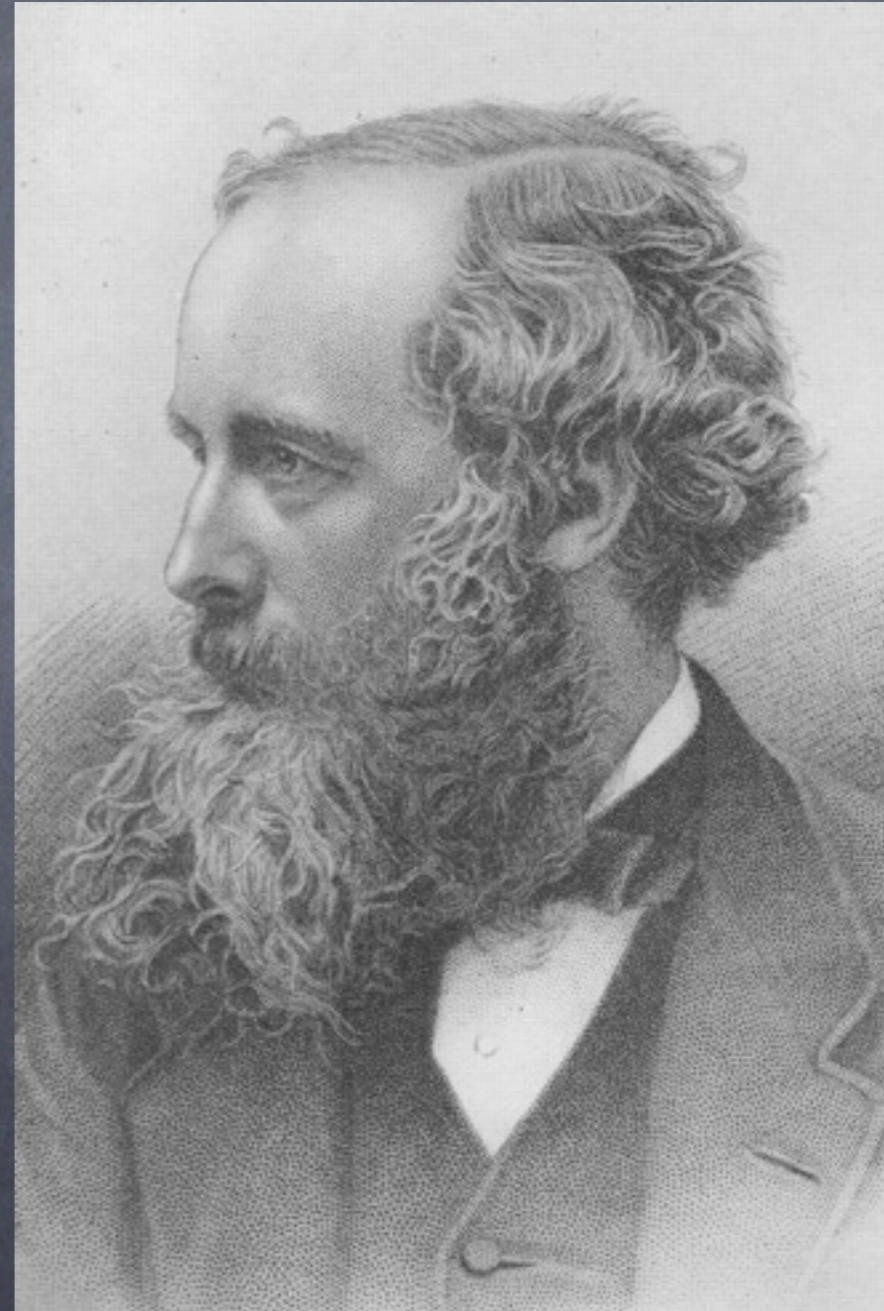


Chapter 5: Relativity

Electro-Magnetic Fields



James Clerk Maxwell



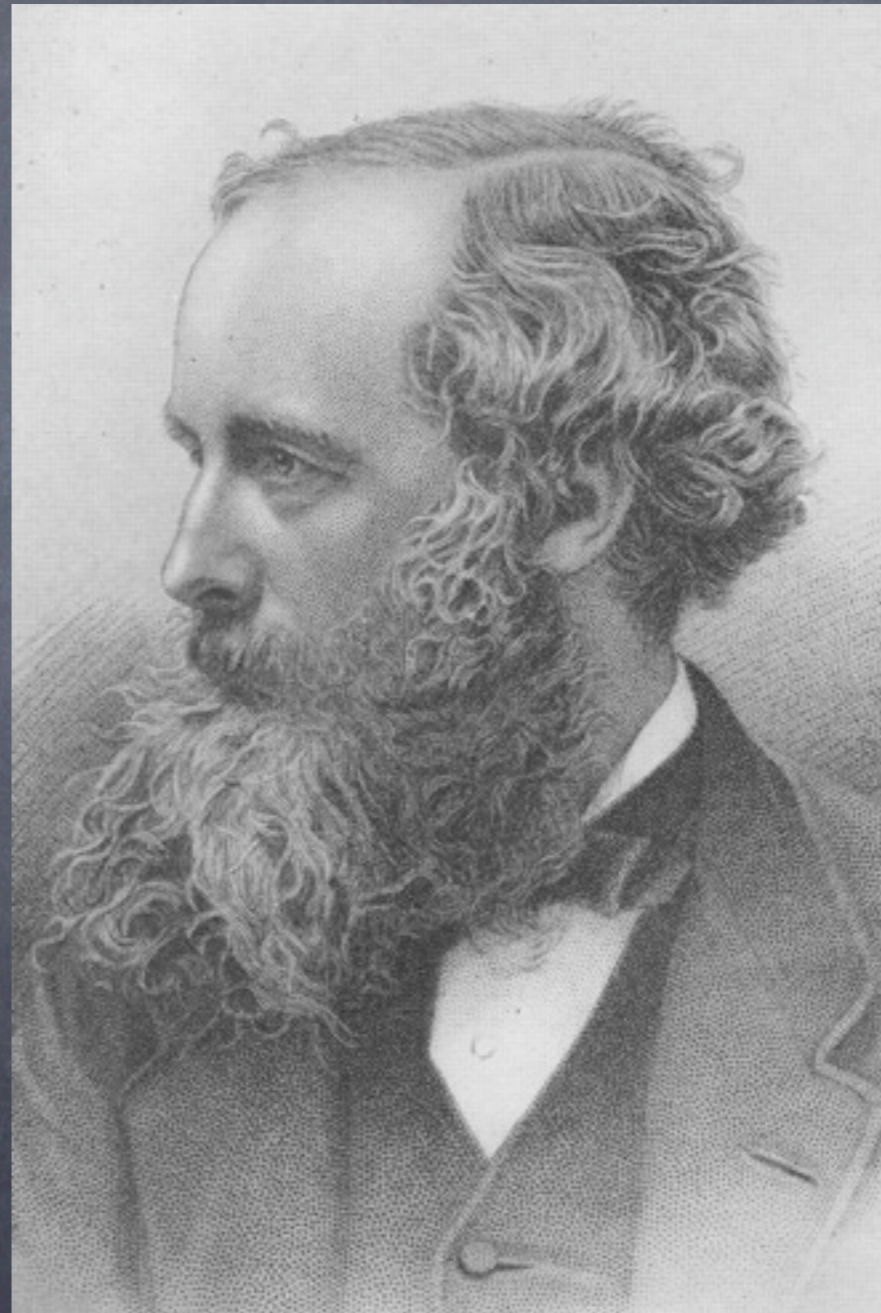
James Clerk Maxwell

$$\vec{\nabla} \cdot \vec{E} = 0$$

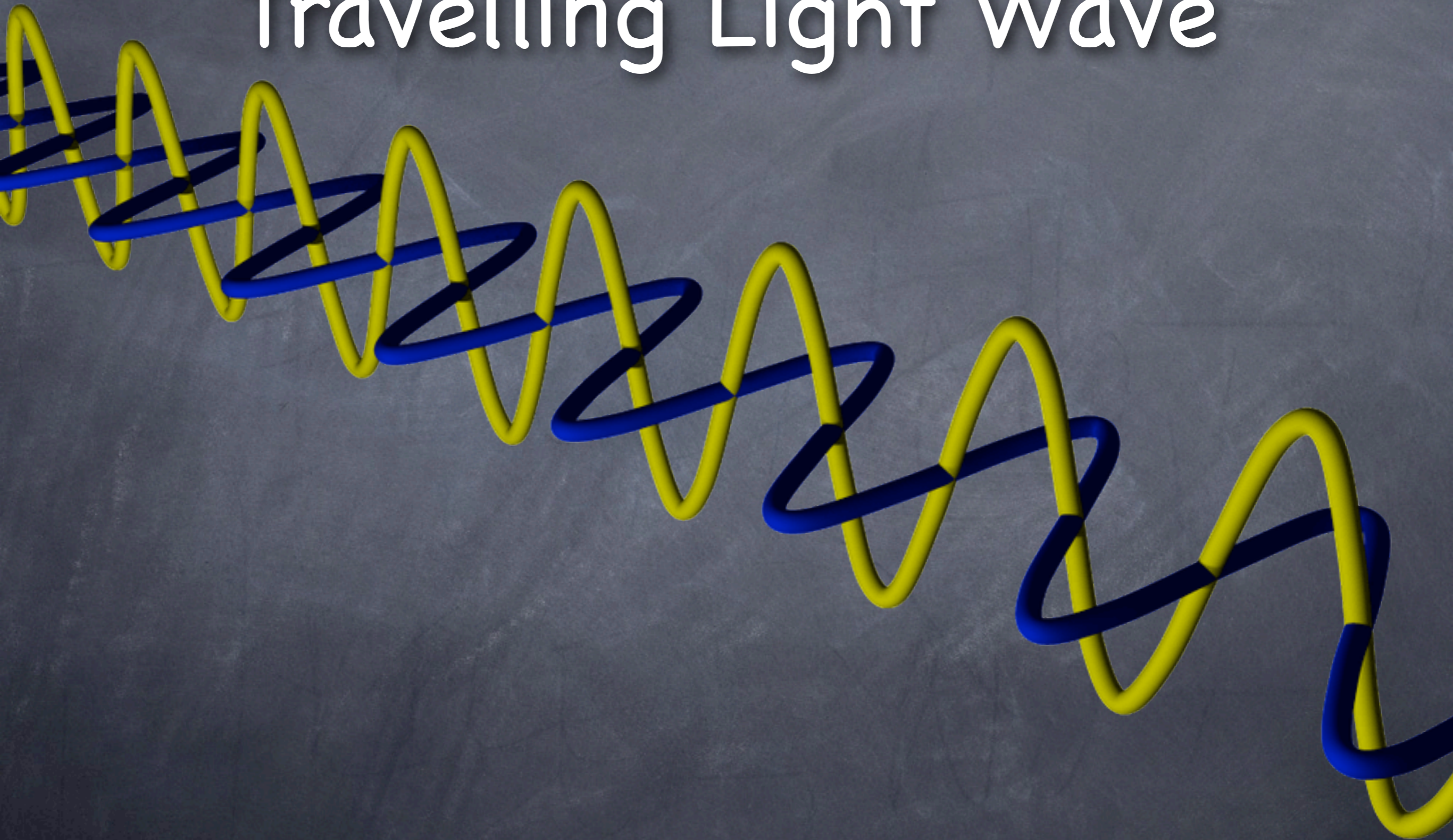
$$\vec{\nabla} \cdot \vec{B} = 0$$

$$\vec{\nabla} \times \vec{E} = -\frac{\partial \vec{B}}{\partial t}$$

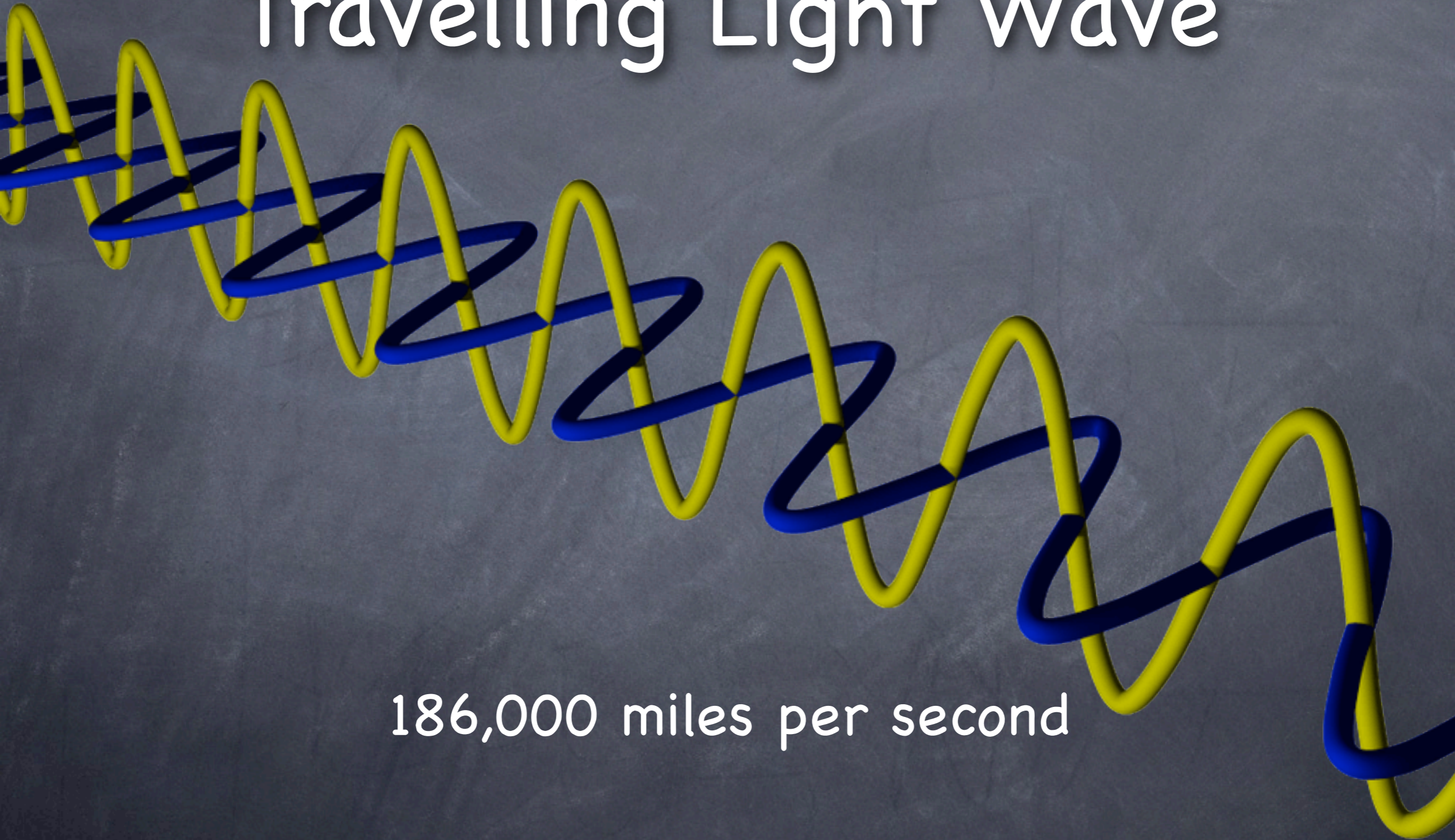
$$\vec{\nabla} \times \vec{B} = \frac{\partial \vec{E}}{\partial t}$$



Travelling Light Wave



Travelling Light Wave

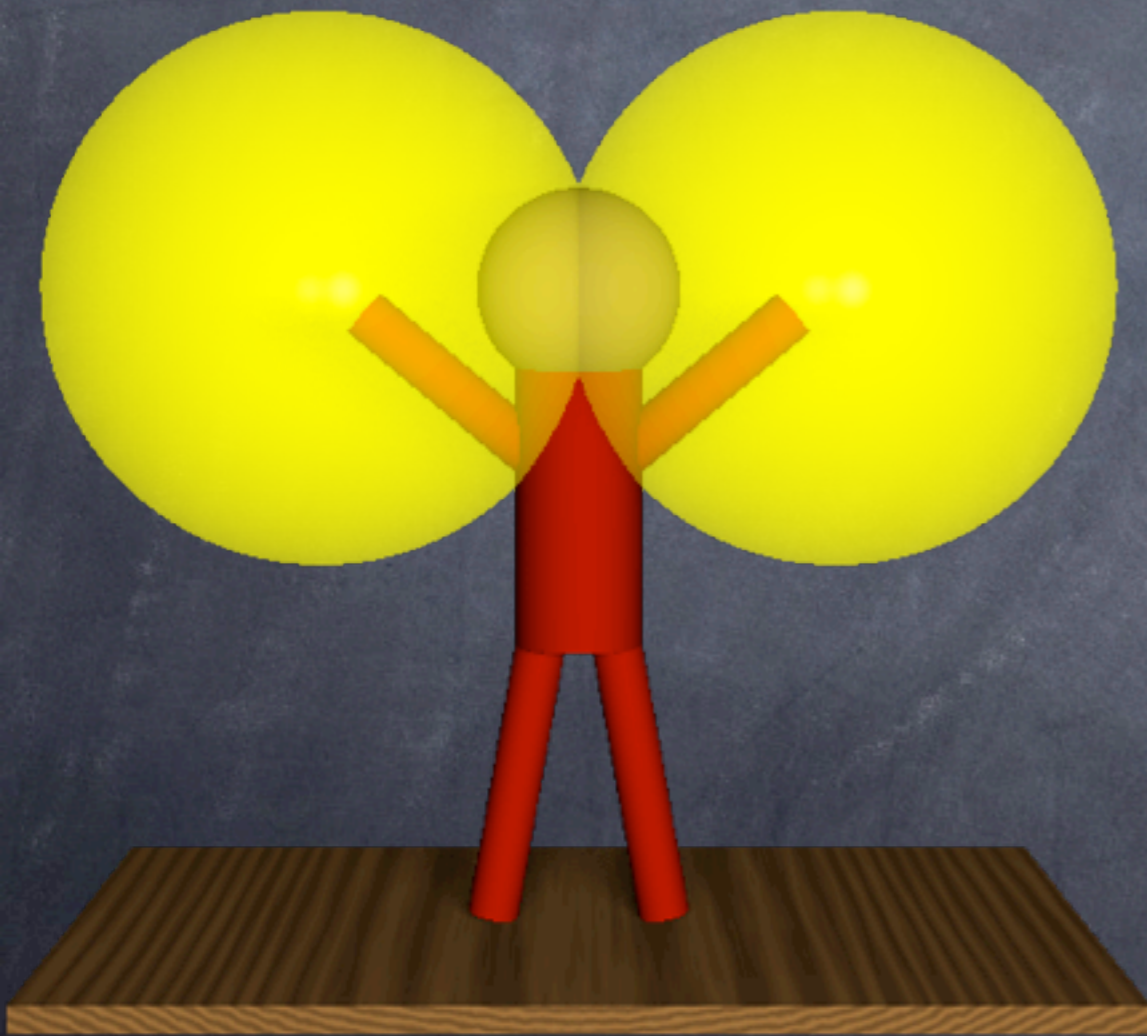


186,000 miles per second

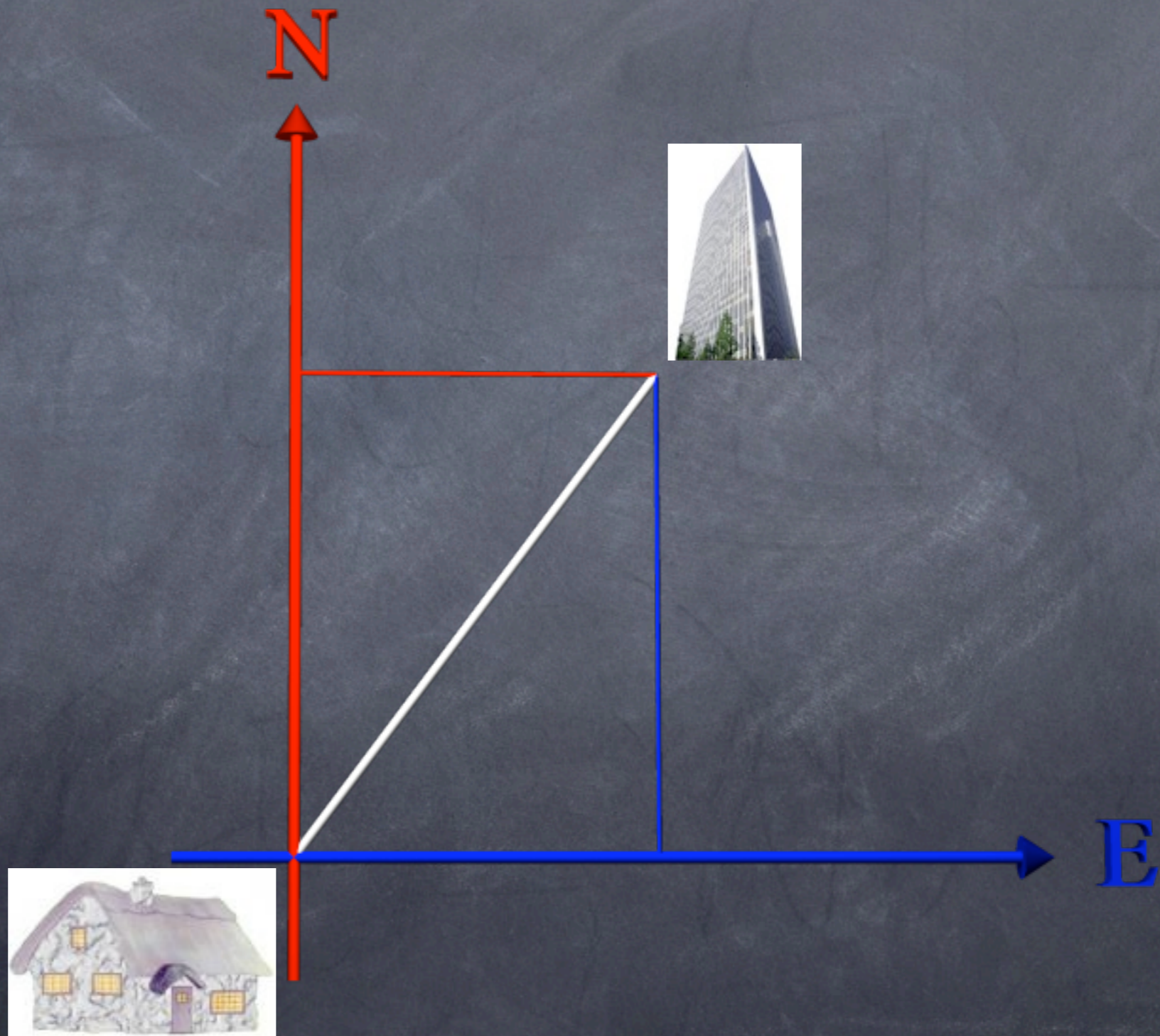
Relativity of Simultaneity



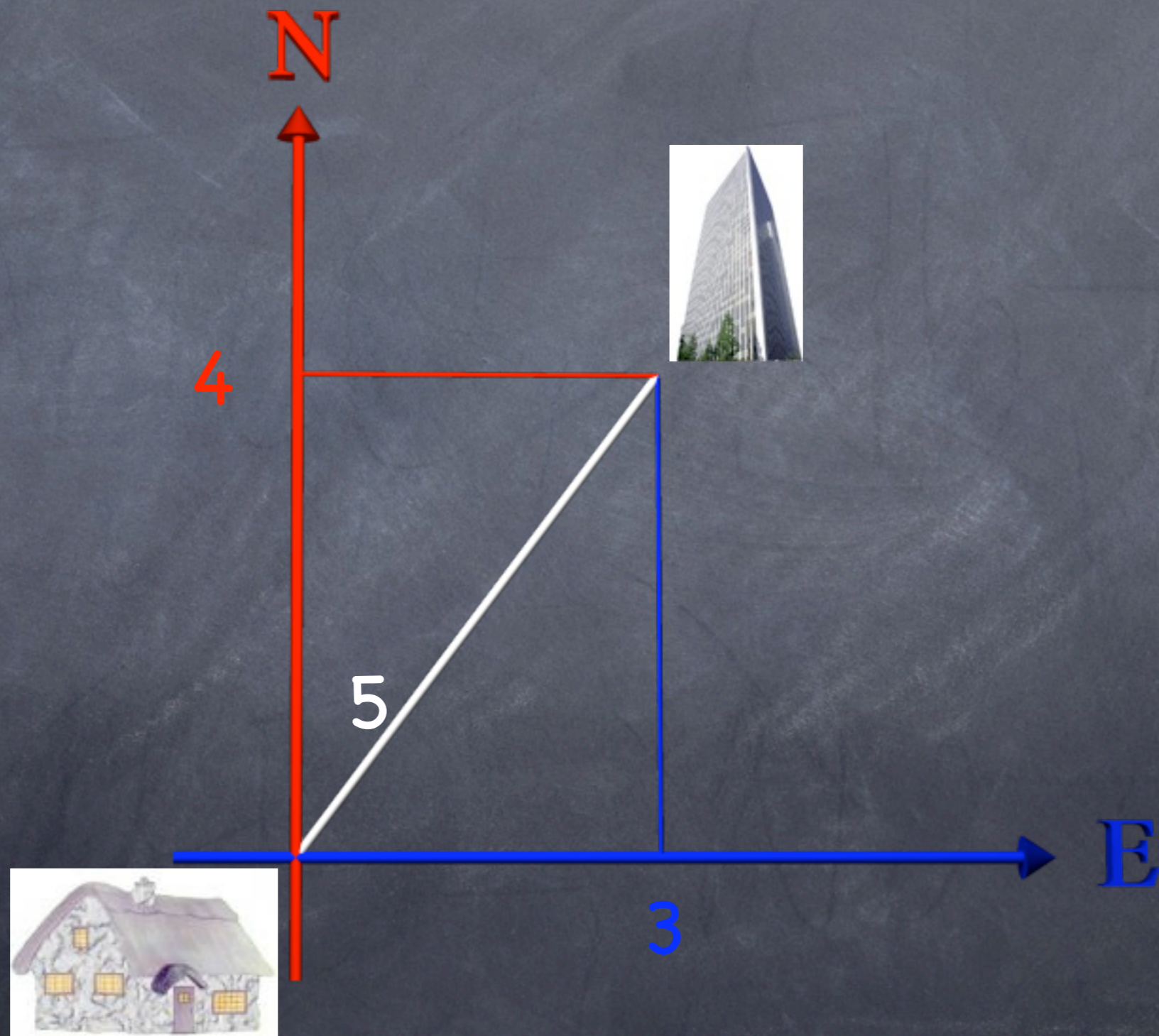
Relativity of Simultaneity



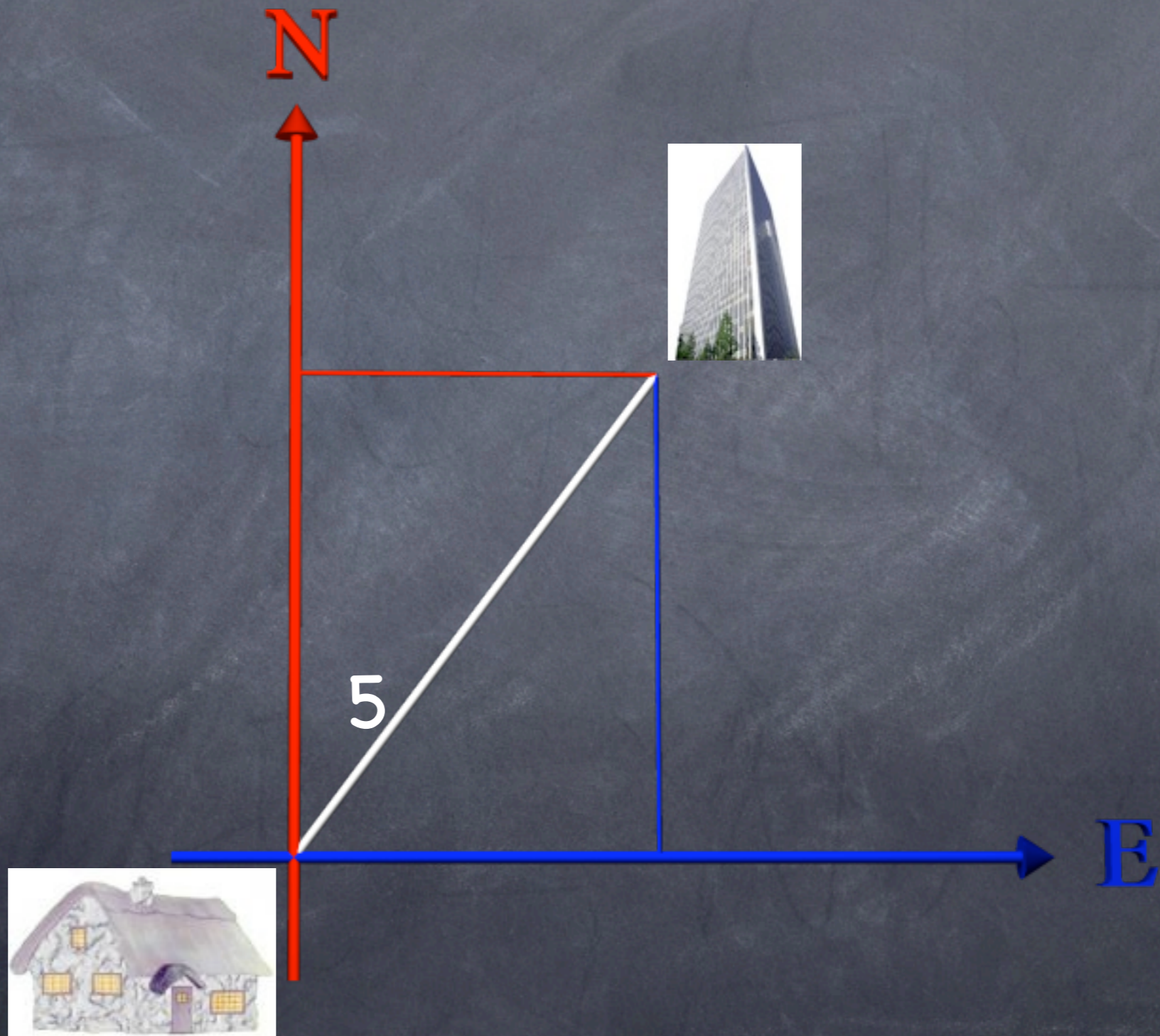
What Are Dimensions?



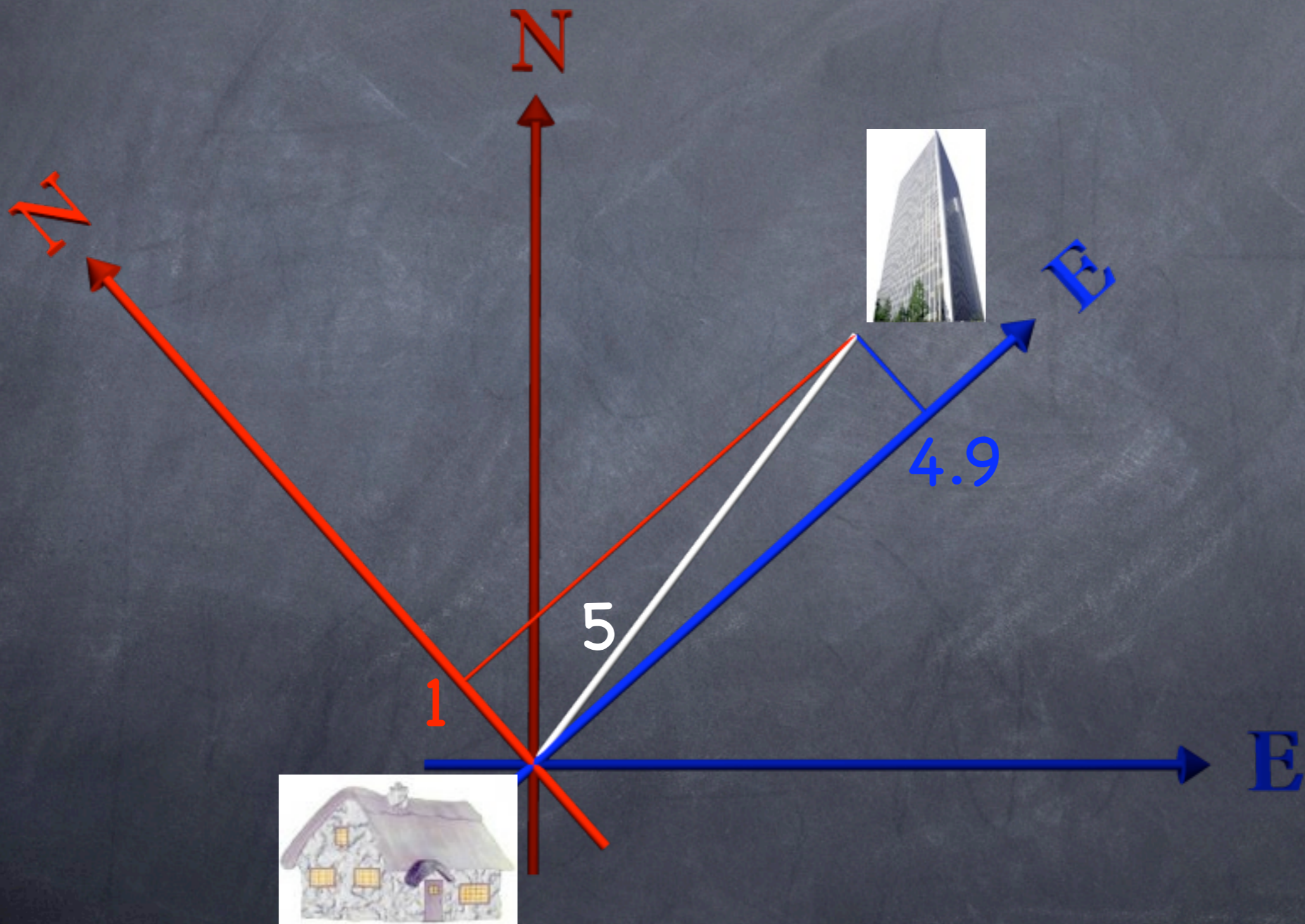
What Are Dimensions?



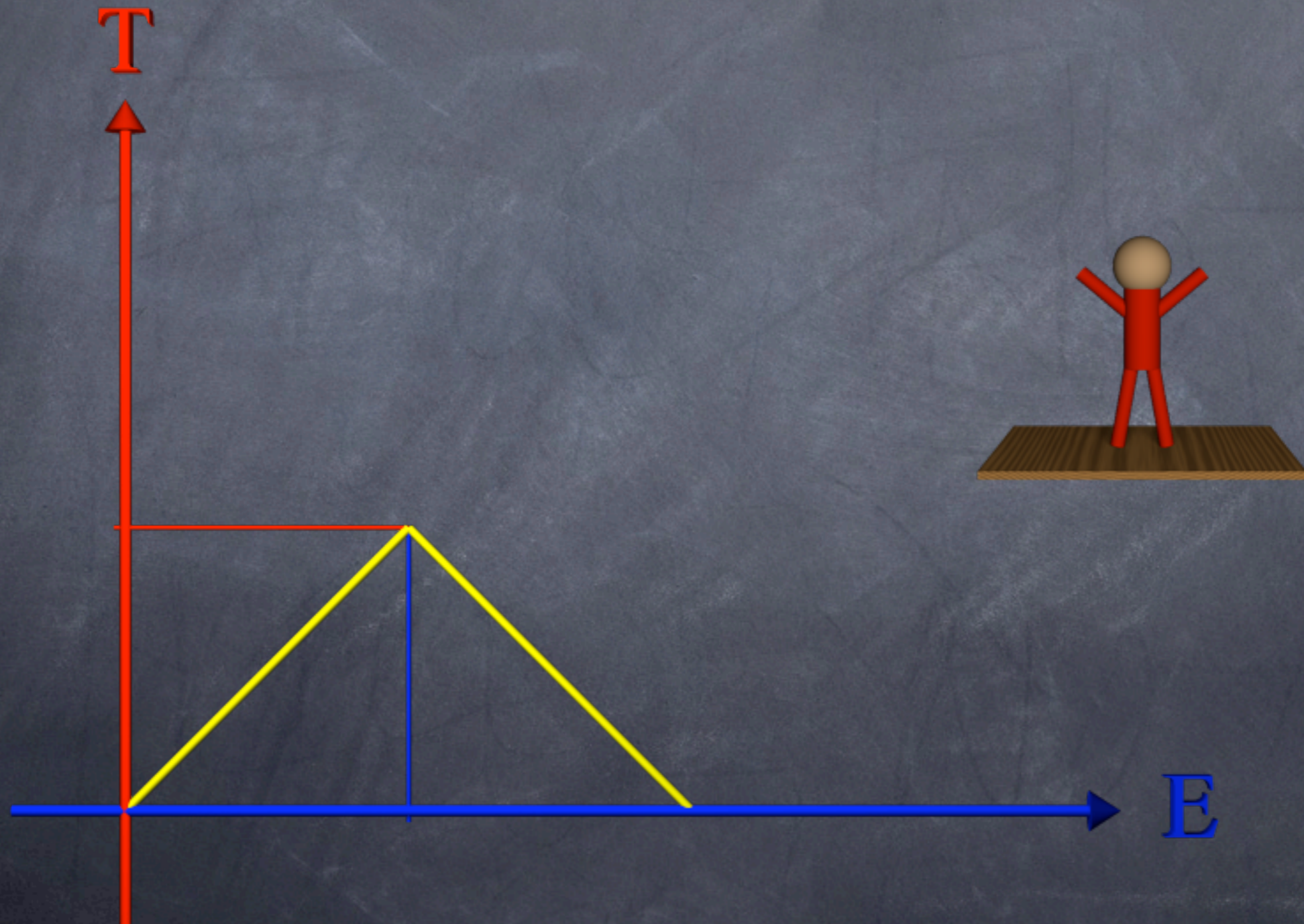
What Are Dimensions?



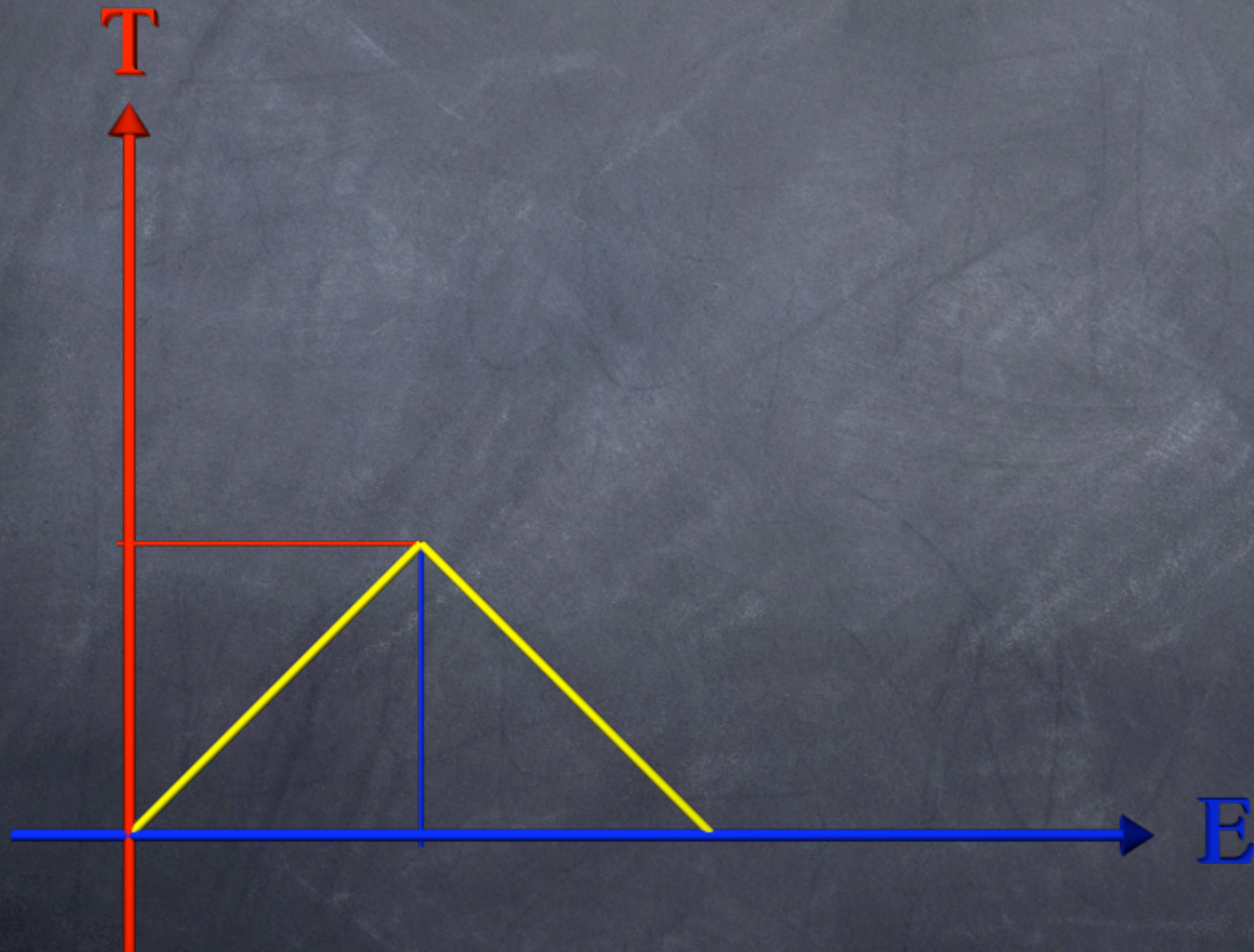
What Are Dimensions?



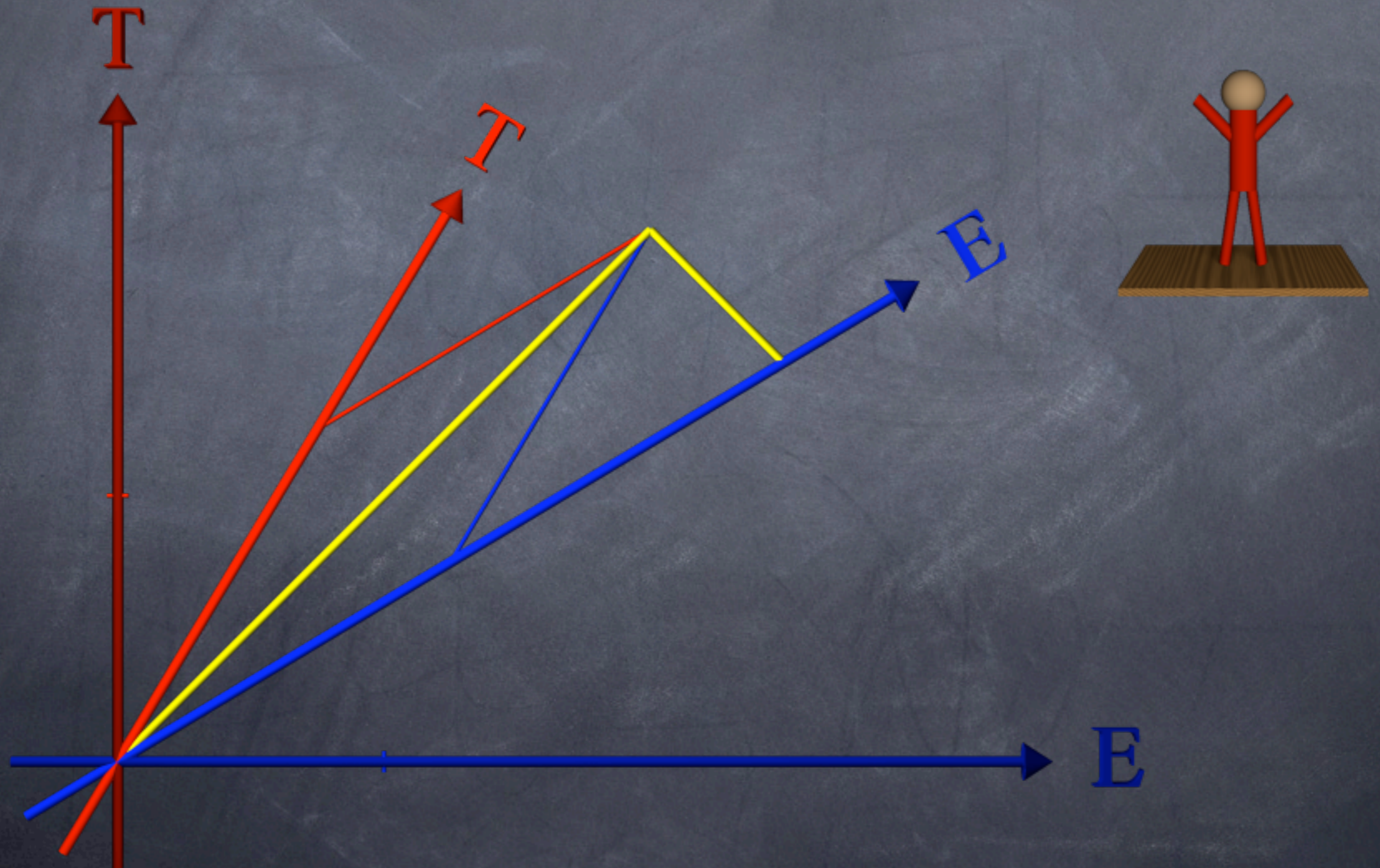
Time: the Fourth Dimension



Time: the Fourth Dimension



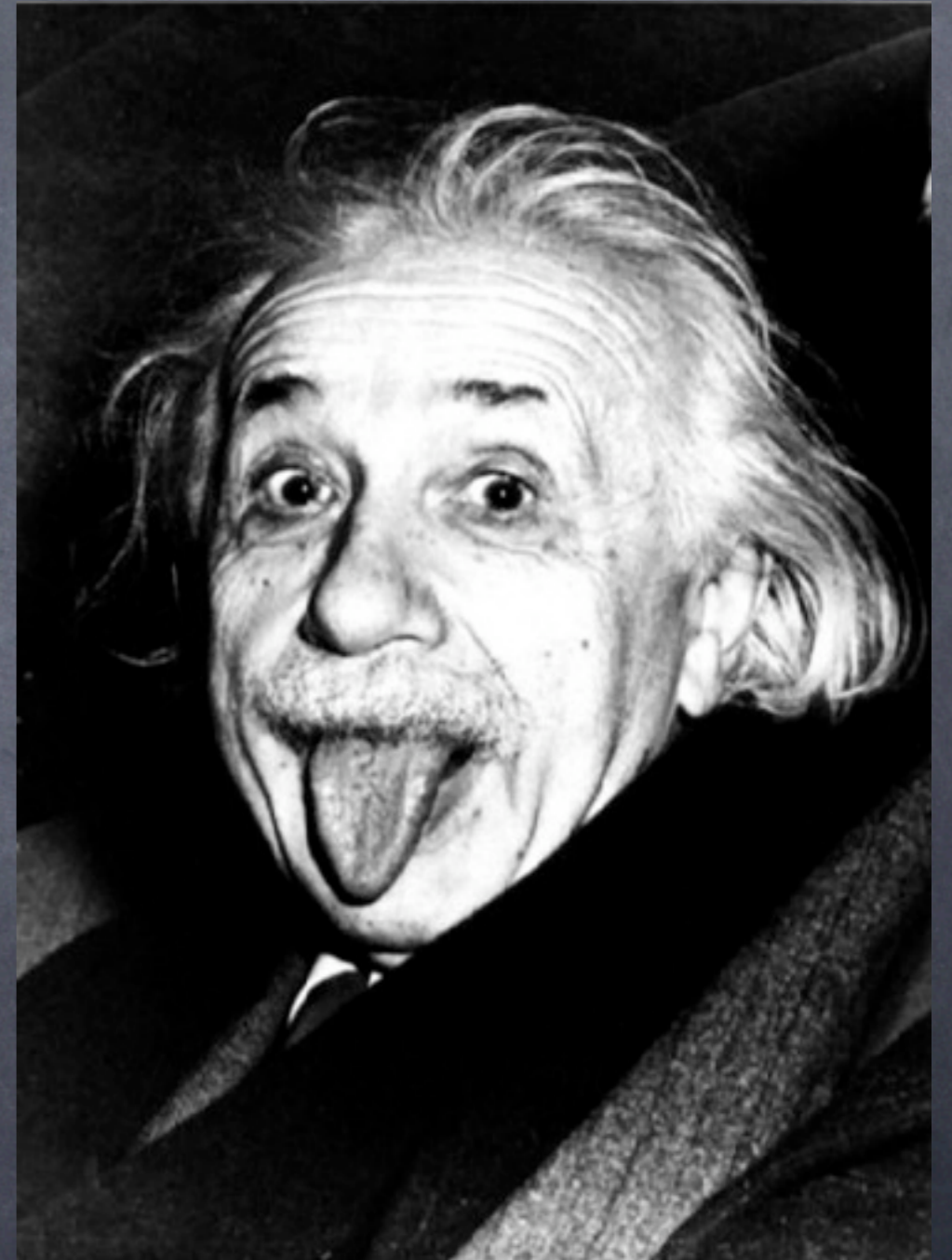
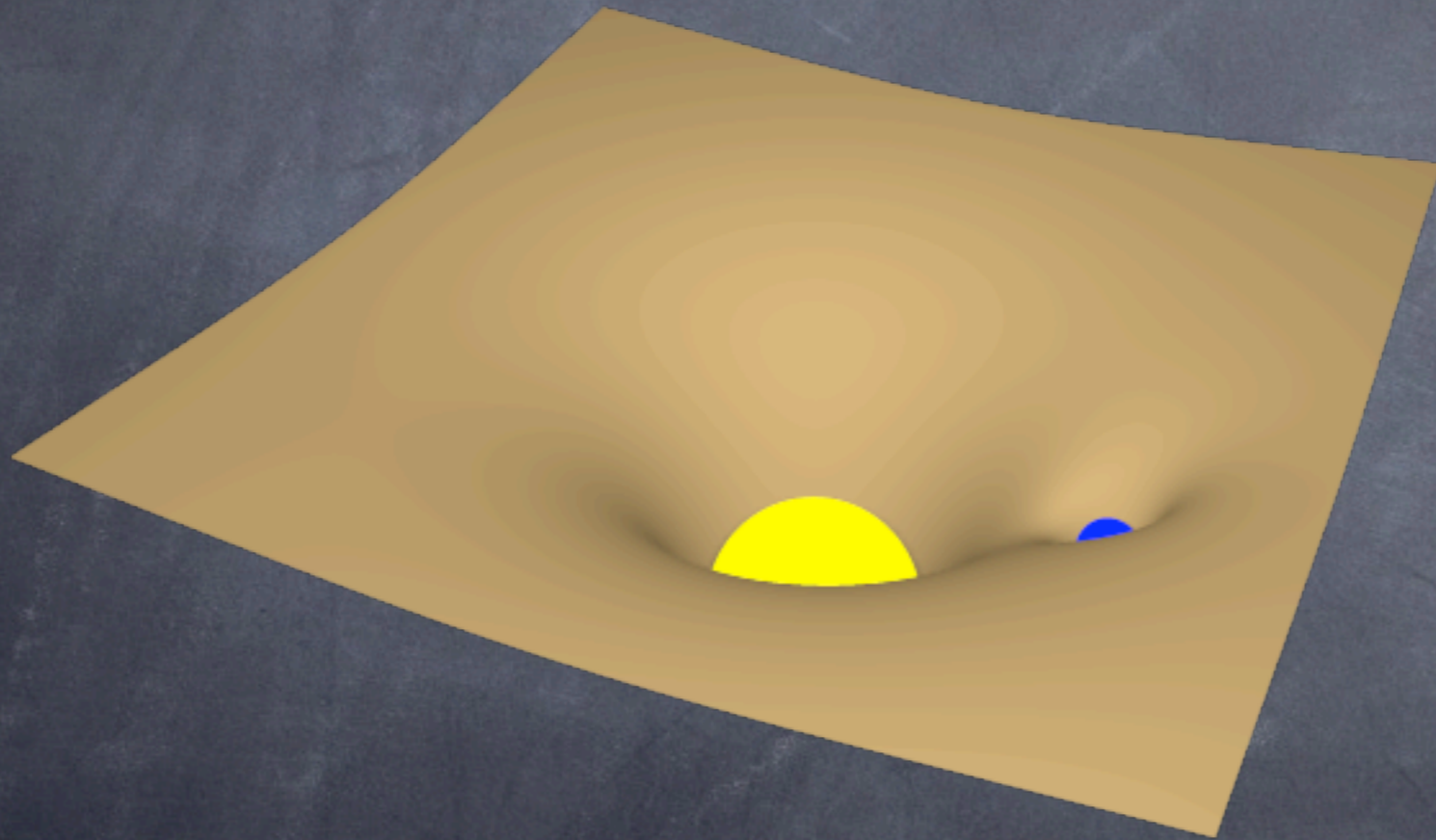
Time: the Fourth Dimension



General Relativity



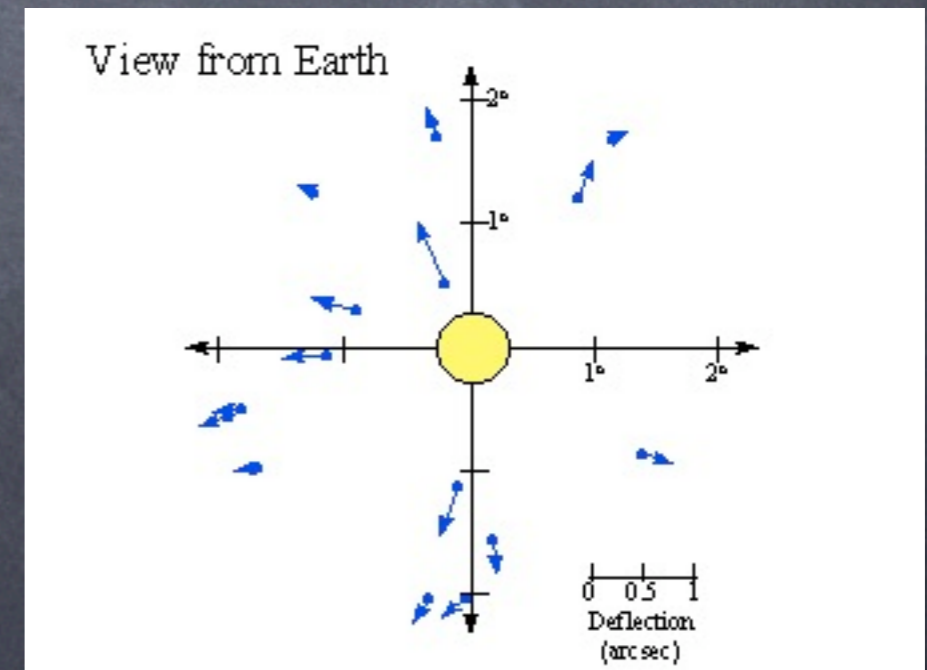
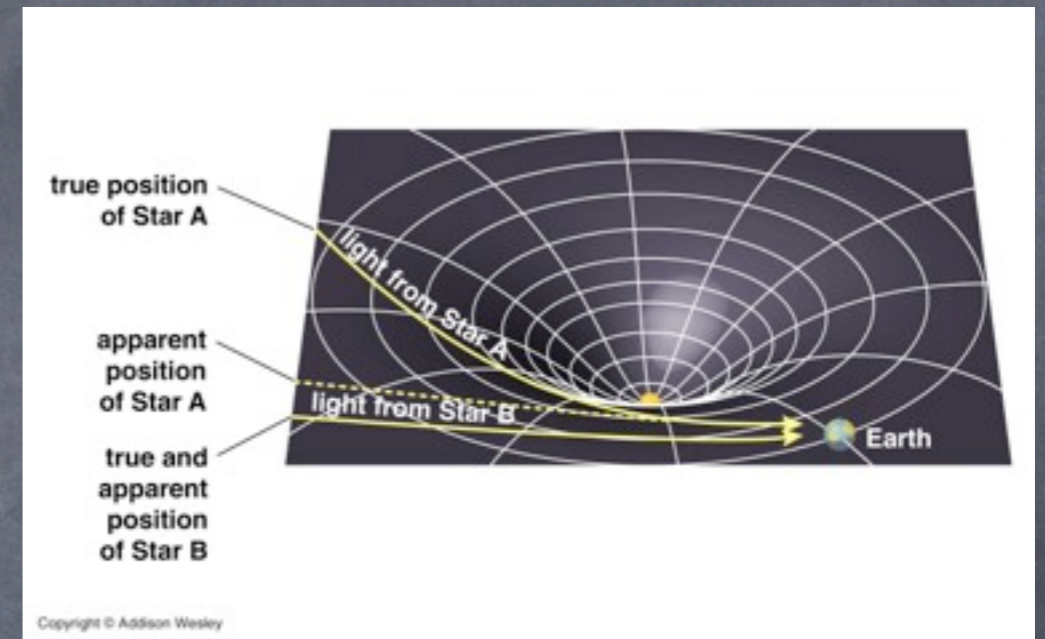
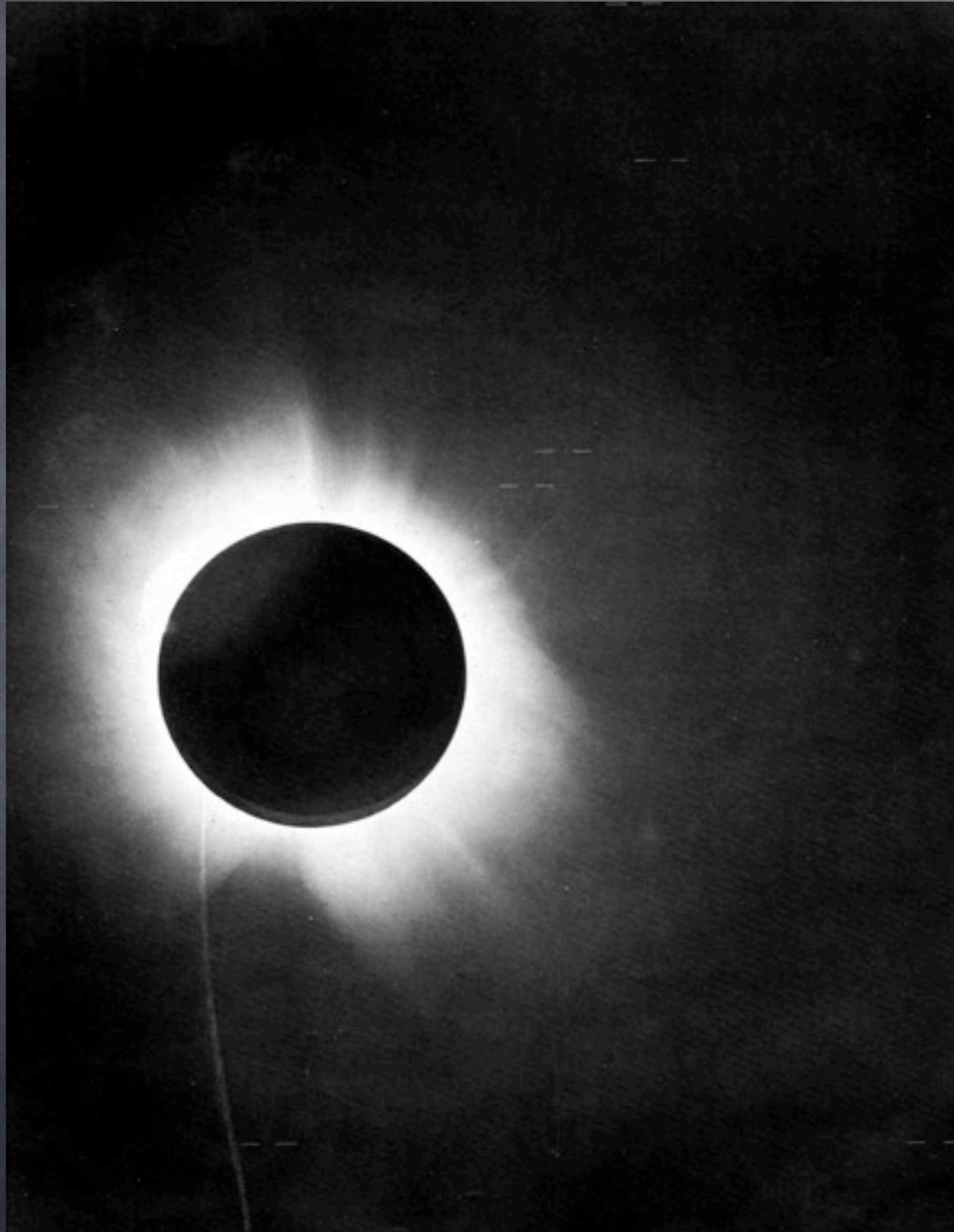
Einstein's Gravity



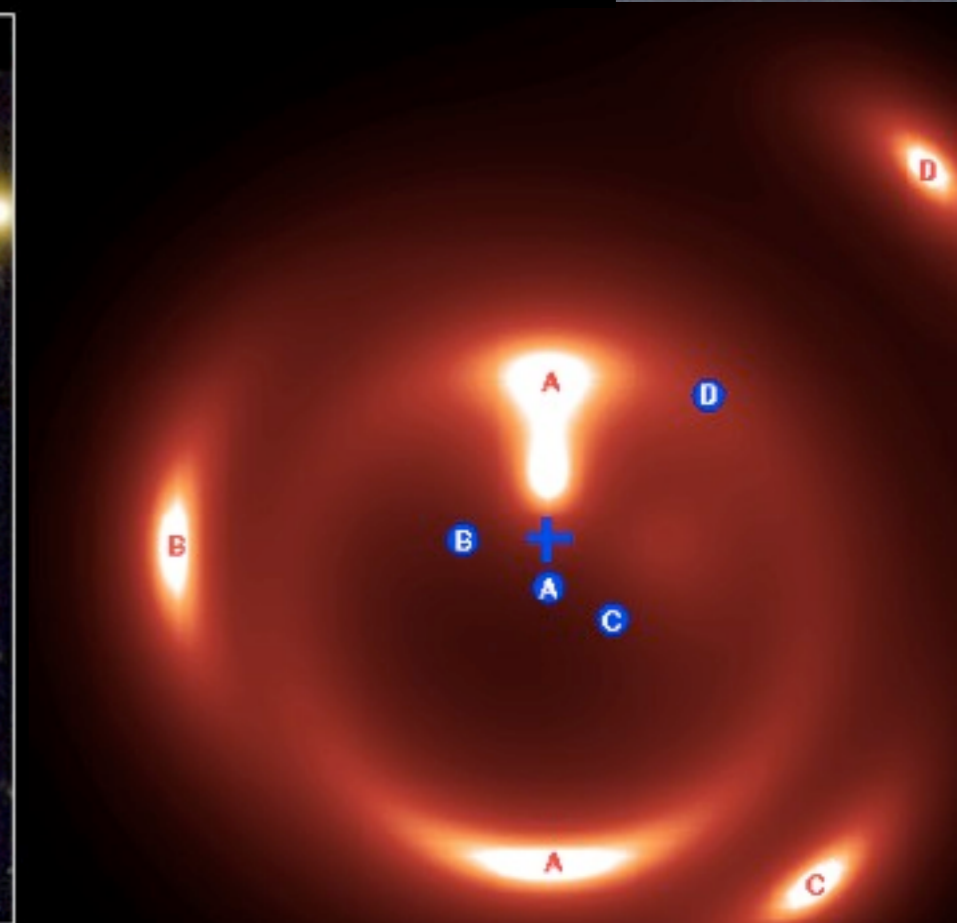
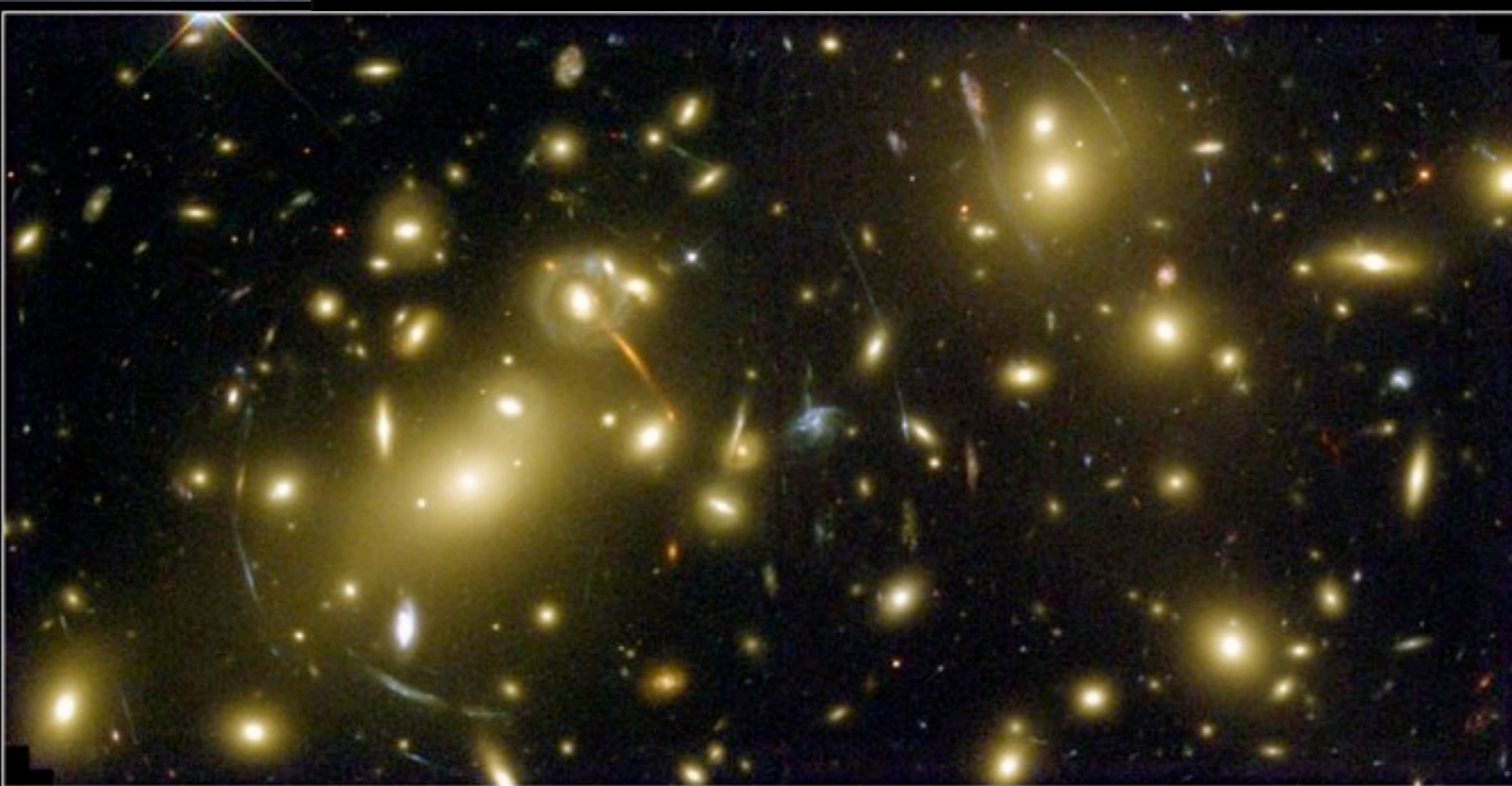
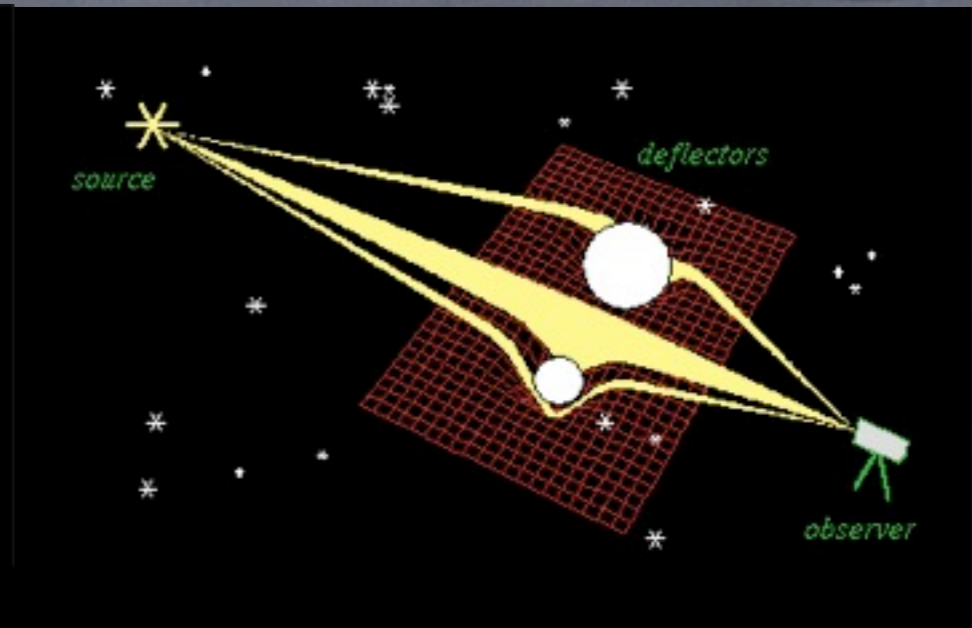
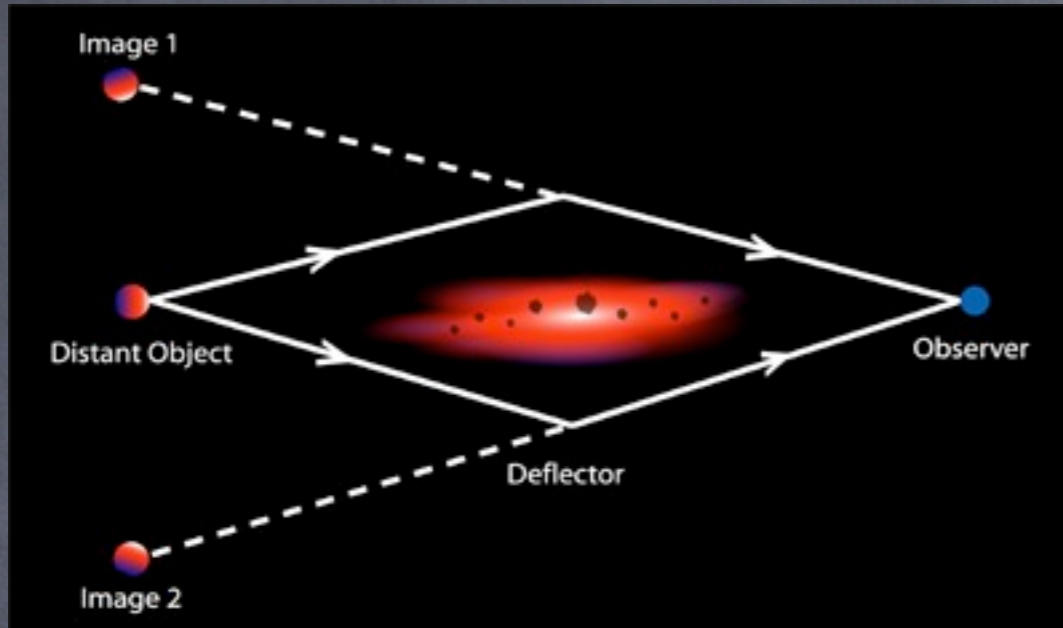
Geodesic



1919 Eclipse



Gravitational Lensing



Galaxy Cluster Abell 2218

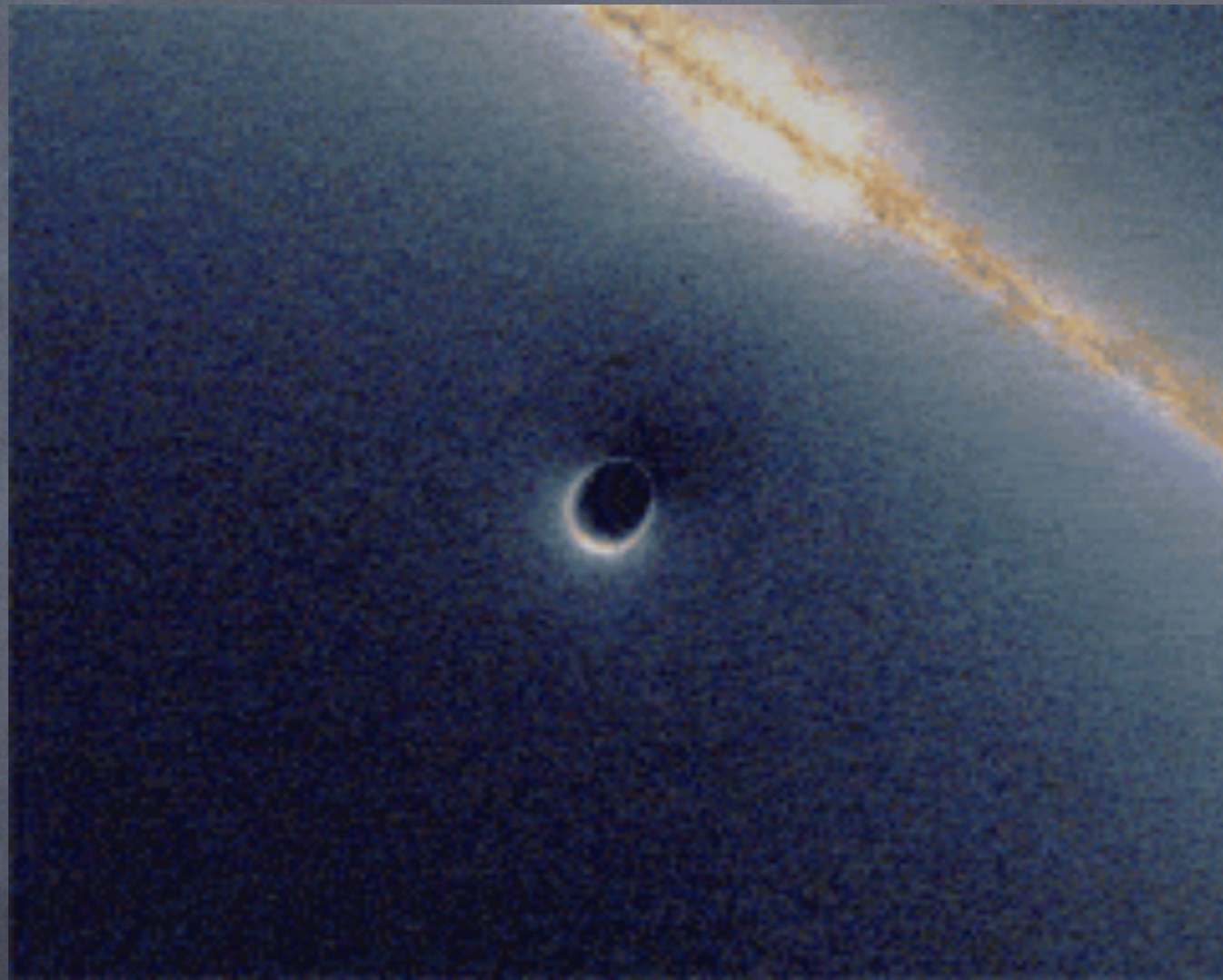
NASA, A. Fruchter and the ERO Team (STScI) • STScI-PRC00-08

HST • WFPC2

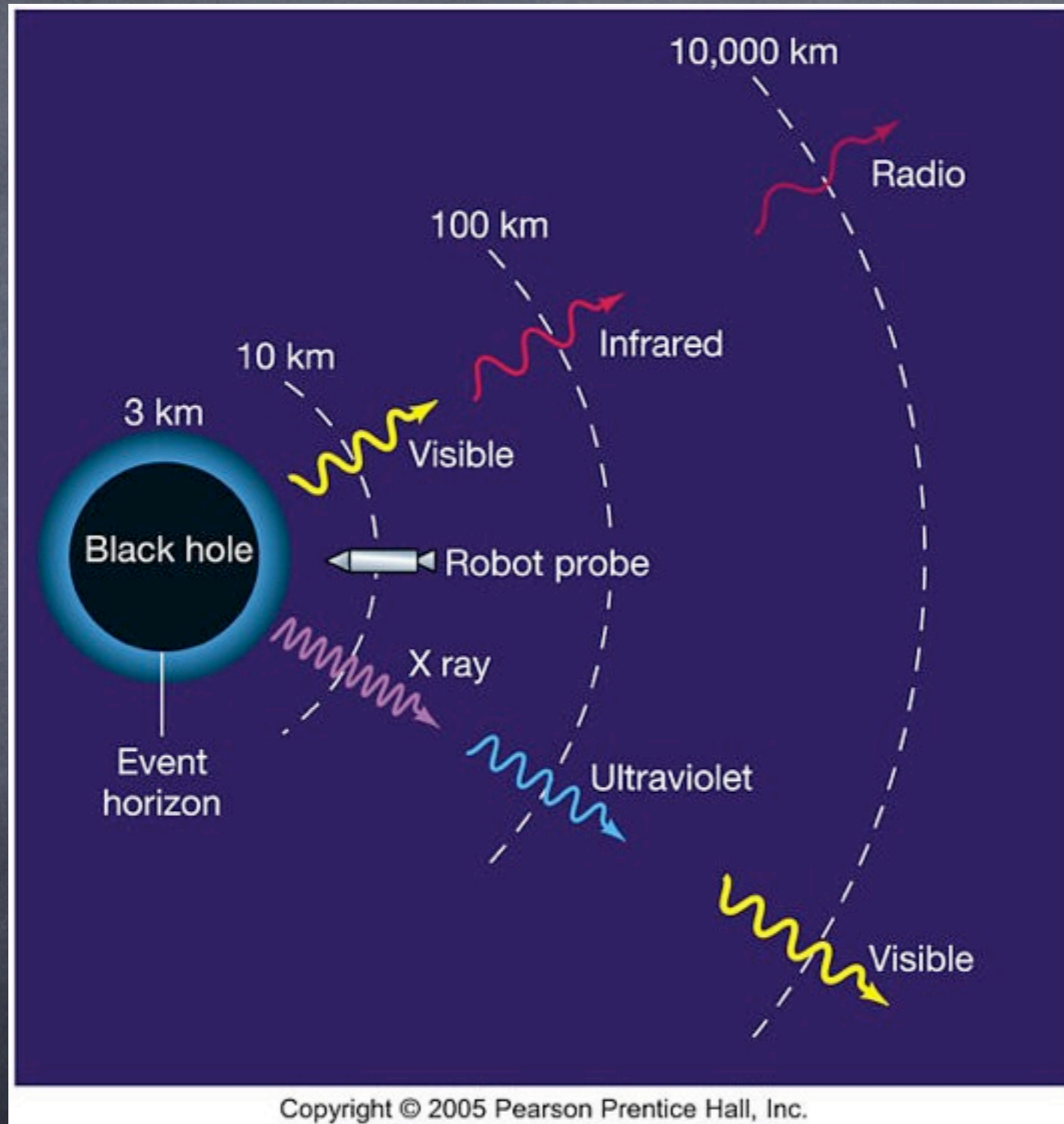
1 arcmin



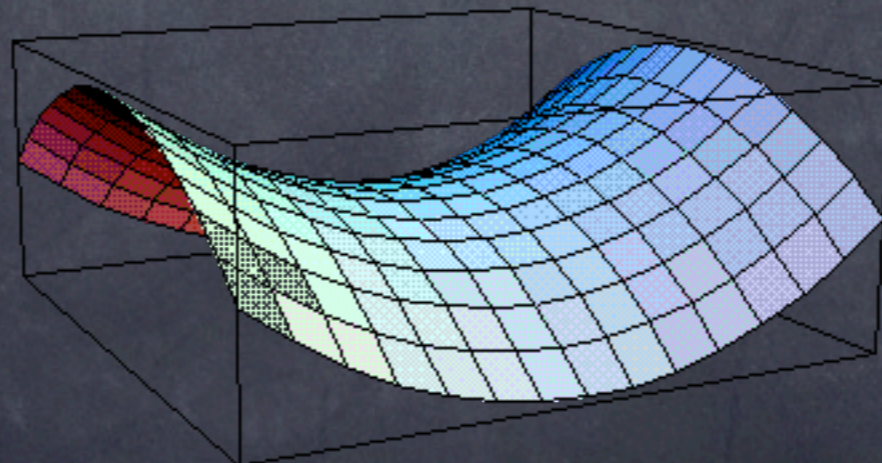
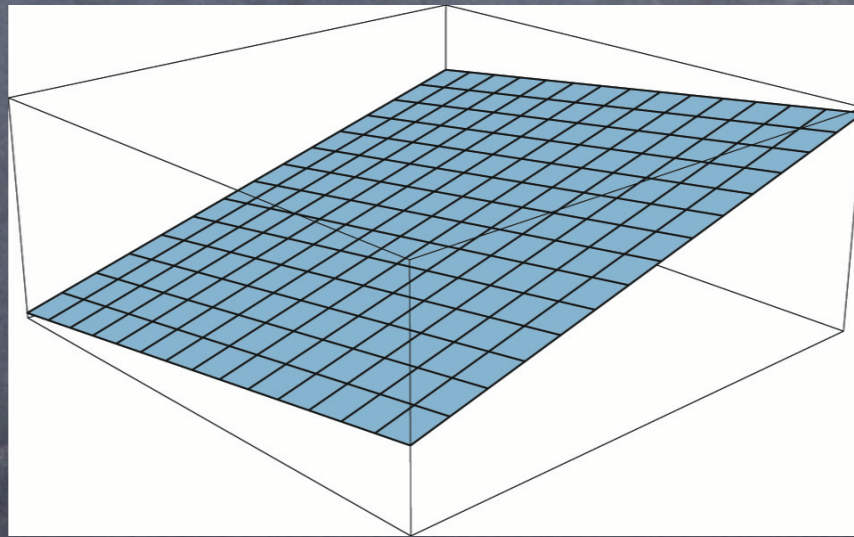
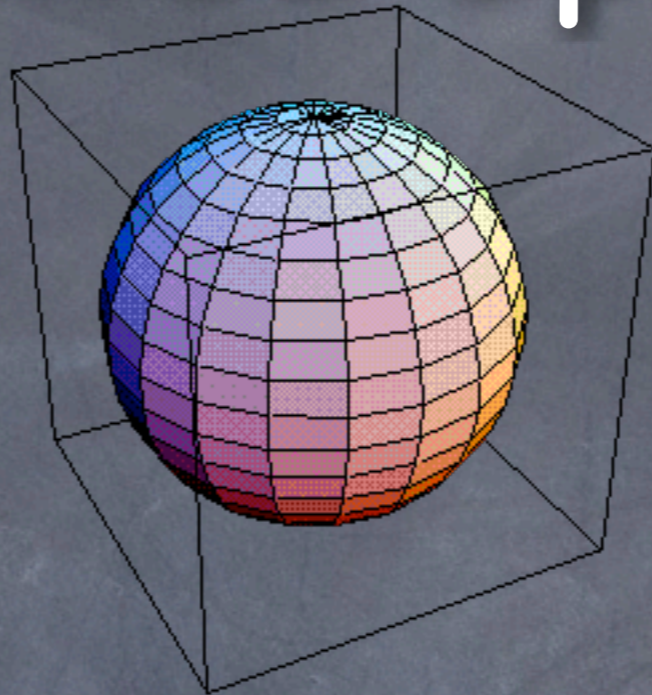
Gravitational Lensing



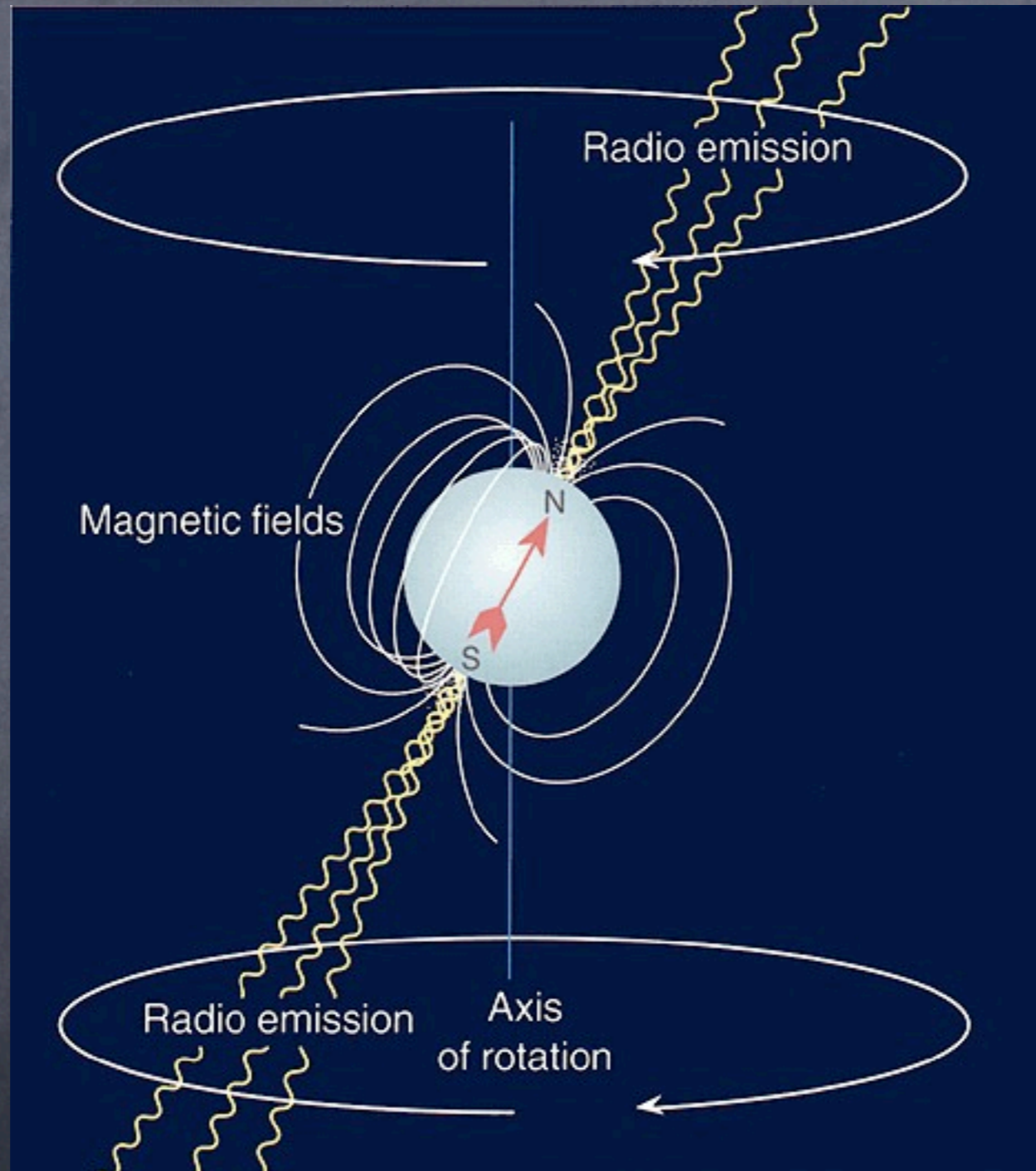
Gravitational Redshift



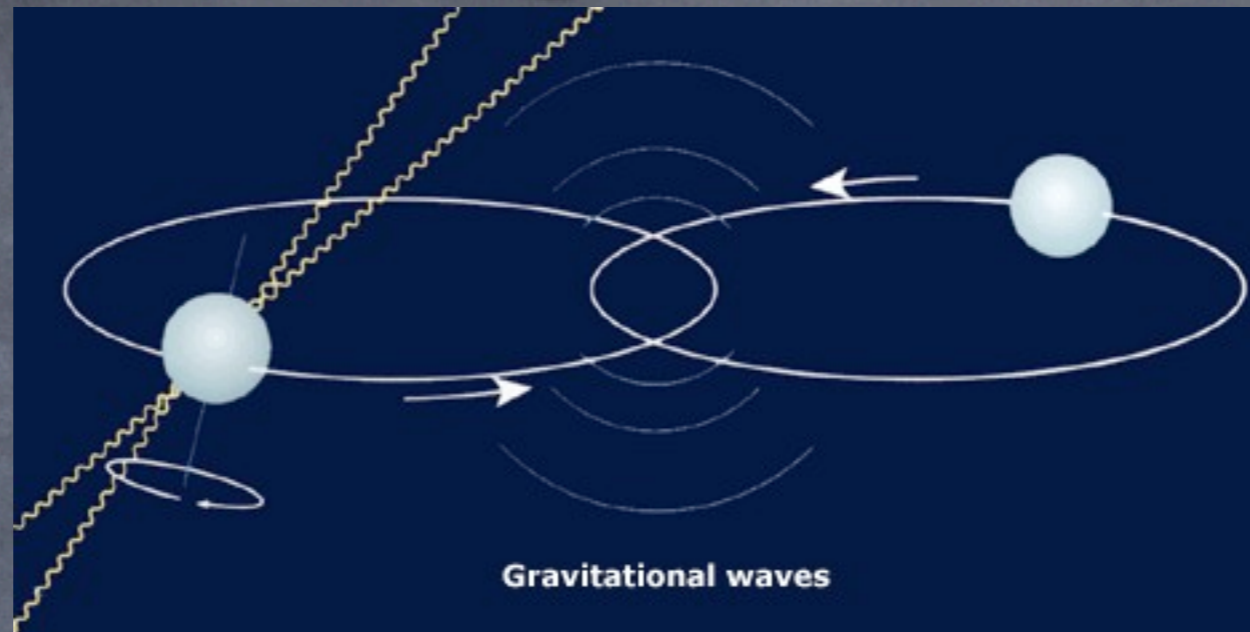
Curved Space



Pulsars

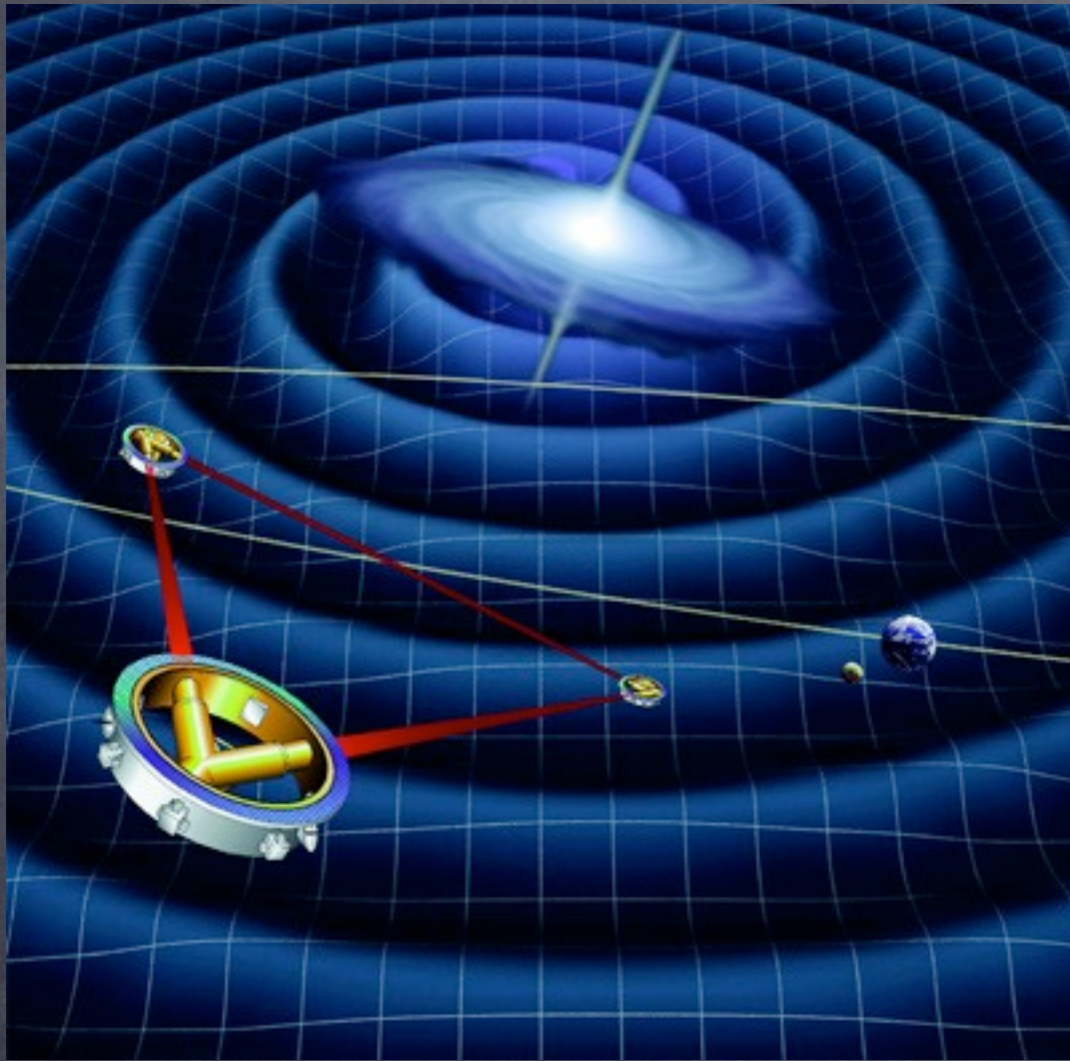


Binary Pulsars



Nobel Prize in Physics 1993

Gravity Waves



Kaluza-Klein Gravity
