Lecture 2

What's "special" about Special Relativity

Einstein first came up with a "theory of relativity" that solved the "speed of light problem" and modified Newton's theory of motion. But Newton's theory of gravity couldn't be accommodated in the theory. It took Einstein about 10 more years to address gravity. The result was General Relativity.

The original theory was then called "special" relativity because it was only a special (no gravity) case of the more general theory.

Special relativity as very simply mathematically, even though the consequences of the theory imply a dramatic change to our notions of space and time. Special relativity could be (and perhaps is?) easily taught in a high school physics class. General relativity is *much* more complicated mathematically, and is typically taught to university physics majors only at a graduate level (if at all).

The postulates of special relativity

1. The speed of light is the same in all inertial frames of reference.
2. There is no experiment that can be done, internal to a given intertial frame of reference, that can distinguish that frame from any other frame.

Or to say it another way:

1. The speed of light is absolute.
2. But, Galilean relativity still holds!