

2.3 The Postulates of Relativity

Note. Albert Einstein published “*Zur Elektrodynamik bewegter Körper*” (On the Electrodynamics of Moving Bodies) in *Annalen der Physik* (Annals of Physics) **17** (1905). In this paper, he established the **SPECIAL THEORY OF RELATIVITY!** I quote (from “The Principles of Relativity” by H. A. Lorentz, A. Einstein, H. Minkowski, and H. Weyl, published by Dover Publications):

“...the same laws of electrodynamics and optics will be valid for all frames of reference for which the equations of mechanics hold good. We raise this conjecture (the purport of which will hereafter be called the “Principle of Relativity”) to the status of a postulate, and also introduce another postulate, which is only apparently irreconcilable with the former, namely, that light is always propagated in empty space with a definite velocity c which is independent of the state of motion of the emitting body.”

In short:

- P1.** All physical laws valid in one frame of reference are equally valid in any other frame moving uniformly relative to the first.
- P2.** The speed of light (in a vacuum) is the same in all inertial frames of reference, regardless of the motion of the light source.

From these two simple (and empirically verified) assumptions arises the beginning of the revolution that marks our transition from classical to modern physics!

Revised: 6/16/2019