# THE THEORY OF RELATIVITY

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The "New Physics", which is the subject matter of the present series of discussions, is in a true sense new, for it has sought answers to problems not considered by the so called "classical physics" of the past. Moreover in attacking these new problems it has been necessary to develop new methods of approach. It will be helpful to consider the methods of physics, new and classical, and point up the exact ways in which the approach of the "new physics" differs from more traditional ways.

**The methods of physics**

The first duty of the physicist is to observe. But for detailed observation, a qualitative view is usually not sufficient, and so almost always the observations are associated with some numerical scale. Thus it is not enough to say that the apple falls in Isaac Newton's orchard, but you must go further and note that the distance covered by the falling apple, within the limits of experimental error, is directly proportional to the square of the time of fall.

For convenience, the observed data are frequently plotted in a graphical form. Thus, for example, the individual observations may be plotted as crosses on the graph of Fig. 1. The coordinate axes can represent any significant numerical quantities in terms of which the observations have been made. Such would be, for instance, the distance fallen by the apple, and the time of flight, for the case of the apple just mentioned.

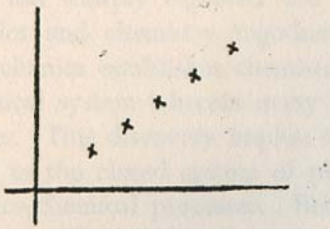

Figure 1. Observational data are usually represented in a graphical way, with respect to fixed coordinate axes. Each x represents one particular observation.