

Ongoing problems with Special and General Relativity, and Solutions

ALBRECHT GIESE

Hamburg, Germany
phys@a-giese.de

Einstein's theory of special relativity has been discussed controversially ever since it was first proposed. Serious objections were raised by Einstein's colleagues Ernst Mach and Hendrik Lorentz. They objected that Einstein's interpretation, the denial of an absolute frame of reference (i.e. ether), leads to logical conflicts with regard to circular motion. Einstein accepted this as a problem, yet nevertheless refused to accept the necessity of an ether, while at the same time failing to give an answer to the arguments put forward by Mach and Lorentz.

The Lorentzian interpretation of relativity, which assumes a fixed reference system, avoids these problems. In addition, the general approach of Lorentz, which does not refer to a modified understanding of space and time but deduces relativistic phenomena from known physical reactions, avoids these problems as well as other known paradoxes of special relativity.

Furthermore, when Lorentz's basic understanding is applied to general relativity, this leads to a different understanding of gravity. In this interpretation, the gravitational force does not depend on mass or on energy, but is a side effect of the forces acting in elementary particles. As a consequence, every particle contributes equally to the gravitational field independently of its mass. This approach solves the problem of Dark Matter without the need for special particles. It also solves the great problem of Dark Energy in a comparatively simple way.