

AGPhil 11: General Topics II

Time: Friday 14:00–15:30

Location: H-HS III

AGPhil 11.1 Fri 14:00 H-HS III

The fundamental role of the proper time parameter in general relativity and in quantum mechanics — ●RENÉ FRIEDRICH — Strasbourg

Einstein's relativity provides us with some hints about the nature of time which have not been fully taken into account in quantum gravity yet. The phenomenon of time dilation is replacing Newton's absolute time with a twofold, complementary time concept, consisting of the observer's coordinate time after time dilation and the observed object's proper time before time dilation.

Although many authors are highlighting the importance of proper time within GR, theories of quantum gravity are usually starting off with the assumption of a relative spacetime manifold. However, for fundamental questions about the nature of time we should not refer to coordinate time but to the more fundamental parameter of proper time. Following this approach, the universe of quantum gravity is composed of solipsistic worldlines which are parameterized by their respective proper time, including lightlike worldlines of fields whose length is zero.

The definition of proper time: "The time measured by a clock following a given particle" provides the particle with a well-defined physical property: its aging - in general relativity as well as in quantum mechanics. It will be shown that, in a first step, time is produced locally by the rest energy of mass particles in the form of proper time, and that only in a second step time is measured and synchronized by observers in the form of coordinate time.

AGPhil 11.2 Fri 14:30 H-HS III

Scientific paradigms and large groups — ●ALEXANDER UNZICKER — Pestalozzi-Gymnasium München

In the past hundred years, the fashion of how scientists collaborate with each other has changed dramatically. Modern science seems to be impossible without groups involving a huge number of researchers. However, this has considerable side effects on the origin and persistence of paradigms in the sense of Thomas Kuhn.

AGPhil 11.3 Fri 15:00 H-HS III

For a new world view of physics without metaphysics — ●HELMUT HILLE — D-74081 Heilbronn, Fritz-Haber-Straße 34

It is a human viewing habit to understand separately seen objects as separately existing objects, although the system sun-earth-moon proves the opposite. None of these bodies would have its orbit without the other and there would be no tides on earth. Entangled quanta have shown that their common origin makes them behave as being one. The Big Bang is the origin of all matter in our cosmos; the matter wants to reunite in form of gravitation. This is another proof for the power of the invisible, which has to be accepted. As a way out, today, we search the invisible in the dark matter and in energy. However, the invisible which I am concerned about has no name. It is only the reverse side of the visible, which we capture by means of the gravitational constant. Thus, gravitation is a form of entanglement of all concerned matter and energy, which I call provisionally super entanglement. In connection with another three reasonable premises this results in a world view of physics which is rational and not metaphysical like the actual one.