Summary

In order to reach a larger readership, this second and revised edition of the book "The Metric of Space-time" has been published in two languages. Essentially, the section on the expansion model of space has been improved, the knowledge of the relationships between microcosmos and macrocosmos has been expanded, the calculation rule for the fine structure constant has been made more precise and a number of other small changes have been made.

In this publication, essential scientific phenomena are explained on the basis of new ideas. These are questions that have occupied physics and cosmology for a long time and for which no satisfactory answers have so far been found. The questions are listed and dealt with in the form of 30 theses. Where any specific topics have been covered in detail in my earlier publications, reference is made to them.

What can the reader expect?

One essential element of this publication is a well-founded redefinition of the metric of space-time. This perception influences all the other questions and thus forms the central element to which this publication owes its title. The space-time equation is geometrically illustrated and interpreted. A space-time level for simultaneous events is defined and it is explained how objects interact with one another via simultaneity. Simultaneous events are projected onto an event horizon in the five-dimensional space-time structure.

Space-time is described with the help of a novel, five-dimensional space-time equation. The well-known phenomenon of time dilation follows directly from this equation. This cannot simply reciprocally apply to two inertial systems, as described by the special theory of relativity. A meaningful definition of time dilation is only possible when a universal reference system is defined [01]. Based on the new time dilation, quantised calculation formulas have been derived for the speeds that objects in two-mass systems experience under the influence of gravitation [02]. Here, the well-known Newtonian equations for the calculation of velocity can be derived as approximations of the new equations.

The velocity-dependent mass is based on entropy constancy. Similar to the Einstein equivalent of mass and energy, a corresponding time-information equivalent is postulated and justified.

It is remarkable and it must be true: The mass of space and - along with it - all the masses of objects change with time; they decay and become smaller. The mass decay could be a decay of the smallest building blocks of matter - the neutrinos - as magnetic dipoles. This gives rise to the two temporal dimensions, the real time and the imaginary time, in the form of magnetic monopoles, the existence of which has long been suspected.

All distances, even atomic ones, increase over time. The time base of all oscillating systems increases with the age of space, but their speeds of oscillation remain

constant. Accordingly, the gravitational constant must then decrease along with the age of the universe.

Space must expand with constant entropy.

Gravity is a quantum-physical radiation phenomenon; its interacting particles are the imaginary photons. The radiation from imaginary photons is described as a consequence of the decay of dipoles. Gravitation is therefore an effect of mass decay. Gravitation must work instantaneously, this is given by the simultaneous effect of the newly discovered, imaginary photons. They can also be used to explain the instantaneous change of state of entangled quanta.

The mass of an object can be defined as the ratio of potential to updated information.

The phenomenon of increasing entropy is investigated and it is explained why entropy, like physical action, can be understood as a product of energy and time.

The mass of the electron neutrino is given as the smallest possible mass. Starting from the smallest possible information unit, an elementary system of units is established and justified. To this end, the expansion of the space at constant entropy is investigated.

It is shown that the age of space can be understood as its free-fall time.

The number of stars in the universe is calculated using the temperature of the background radiation, the size of space and the size of an average star.

It is shown why dark matter can be attributed to the existence of magnetic south poles in the outer regions of galaxies.

Moreover, an explanation is provided as to why dark energy does not exist at all, and that in space energy conservation is valid (in addition to the conservation of entropy, including gravitational energy).

Both the special and general theories of relativity turn out to be incorrect. Appropriate explanations are provided.

The huge numbers in the universe can be explained by the interaction of the microcosmos and macrocosmos and its potential and current information. Particular interrelationships of nature are revealed and explained for this purpose.

An exact value is given for the fine structure constant.