COORDINATE SYSTEMS LARGER THAN FOUR DIMENSIONS

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Abstract

A method was found for constructing coordinate systems larger than four dimensions. Velocity vectors and base units were used to define a reference frame by attaching a clock to each of the velocity components. Additional meters were also attached to velocity components. All of the resulting systems can be physically constructed and tested.

Introduction

General Relativity has an inconvenient limitation in four dimensions such that at high velocities near light speed a transformation must be made from space like to time like coordinates. A six dimensional system could avoid the transformation if three independent components of time could be introduced into a reference frame. Previous work by others has led to complex mathematics with imaginary components, and systems that cannot be physically constructed.

Published work by Harold Puthoff(1) and others on polarizable vacuum theory has opened the possibility that deep space transport(2) may be achieved in less than a life time, but depending on how the questions are answered about people and equipment perform in larger dimensional systems of high speed(3).

Roger Penrose(4) did advanced research into complex physical quantities and concluded that the imaginary parts give compensation for additional dimensions that would be needed to represent the physical system in real components, without saying how many additional dimensions are needed or what types of dimensions are missing.

Kaluza and Klein[5] provided a hypothetical five dimensional system from which Maxwell and Heaviside Equations emerged as a consequence of the fifth dimension. They were not able to physically construct the 5D system. Their work suggested that higher dimensions would contain electrical and magnetic components.

In more recent times research by Puthoff, Desiato[6] and others explored the properties of space time and limitations of General Relativity relevant to space travel. The next steps in space exploration require an answer to the questions of higher dimensions near light speed for estimates of performance of energy systems[7], people, and equipment in prolonged acceleration.

Can Coordinate Systems Larger Than 4D Be Constructed?

There seems to be a path forward to higher dimensional systems by constructing coordinate systems from velocity vectors and velocity base units instead of distance vectors and distance base units.

In a 3D velocity vector system a different but identical clock can be attached to each vector giving a 6D system that can be constructed and tested. This is the first step to higher dimensions. It avoids the transformations from space like to time like coordinates near light speed, helping to estimate the capacity of materials and people to function[8][9][10] in extreme situations.

A lesson from Kaluza and Klein is that higher dimensions involve electromagnetism as fundamental components.

In extension of the 6D system a different electroscope and magnetometer can be attached to each of the velocity base units giving a 12D super symmetry. This is not the 10D symmetry, 11D cosmology, or 12D super symmetry other people had in mind, but is a set of coordinate systems all of which can be constructed and tested with no leap of faith, fuzzy logic, or dark science.

We could add accelerometers to each velocity vector also, but they appear to be redundant in the 12D system. How about in higher systems?

So far all the clocks and meters have been attached to only 3 velocity components. It appears that higher systems are possible by attaching each clock and meter to a different velocity vector and randomly orienting them in the coordinate system that still is defined by the original three velocity vectors.

In this way a 27D coordinate system can be defined by including the accelerometers. It looks so much like the 26D of original string theory that it is tempting to allow one redundancy in the 27.

Certainly this will not be acceptable to some who specialize in higher dimensions. It does seem to agree with Kaluza and Klein and bring higher dimensions within grasp of the non-specialists. Especially for the 6D system there seems to be a practical use for it in a not so distant future.

Conclusions

There does seem to be a possibility for constructing coordinate systems larger than four dimensions. Velocity vectors and base units were used to define a reference frame by attaching clocks and meters to the velocity components. All of the resulting systems can be physically constructed and tested.

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modification of PV theory, giving the discovery of higher dimensional systems more importance for space research.

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