

Translation into English: [Chapter 2 - Catalogue of Errors for Both Theories of Relativity](#)

from the German documentation of G.O. Mueller

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H: Mathematics / Error No. 6

The conditions for orthogonality are said to hold in four-dimensional space

In his criticism of the derivation of the Lorentz transformations by Albert Einstein, K. Pagels (1985, p. 30) draws attention to the fact that the relativists operate in four-dimensional (Minkowski-)space with conditions for orthogonality. Quoted on the example of Kopff (1923, p. 33), who demanded that the time coordinate "be applied as an imaginary number on a real axis that is perpendicular to the three space axes".

Pagels: "The mathematics must protest, however, if with respect to the 'four-dimensionality' of (7) the conditions for orthogonality of (8) are used! In principle it is always possible to argue with a 3+n-dimensional geometry - but conditions for orthogonality can never ever be applied to a 3+n-dimensional geometry! Only in Euclidean geometry do the conditions for orthogonality hold - and it is the very fact that the conditions for orthogonality hold only in Euclidean geometry that distinguishes Euclidean geometry from all other possible geometries!"

When they want to parry against the criticism the relativists always refer to the inevitable unintuitive nature of their creation and even present this as a merit. In producing their creation, on the other hand, they inevitably make use of intuitive ideas, and - to top this - of incorrect ones such as the supposed "orthogonality in four-dimensional geometry", or of other incorrect, intuitive ideas such as "Minkowski's World" as space and the "world line" as distance. Anyone who practices physics in the real macro-world fails to escape the intuitive ideas and must be careful not to talk nonsense.

Kopff, A.: Grundzüge der Einsteinschen Relativitätstheorie / 2nd edition. Leipzig: Hirzel, 1923. - Einstein, Albert: Über die spezielle und die allgemeine Relativitätstheorie : with 4 "Abb." / 21st edition 1969, reprint Braunschweig etc.: Vieweg, 1984. 130 pages (Wissenschaftliche Taschenbücher. 59.) - Pagels, Kurt: Mathematische Kritik der Speziellen Relativitätstheorie / 2., bound edition. Oberwil b. Zug: Kugler, 1985. 112 pages.