

Abstract Submitted
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Paul Ehrenfest and the development of Kaluza-Klein theory.

PAUL HALPERN, University of the Sciences — In his position at Leiden, Paul Ehrenfest promoted inquiry-based dialogue among the visitors to the university, addressing a wide range of fundamental questions about physics. One such visitor, in summer 1916, was Finnish physicist Gunnar Nordström, who had recently published a five-dimensional unification scheme. After discussions with Nordström, Ehrenfest became interested in the question of dimensionality himself, and published a remarkable paper, “In what way does it become manifest in the fundamental laws of physics that space has three dimensions?” We’ll show in this talk the connections between Ehrenfest’s work and the subsequent development of Kaluza-Klein theory: extending general relativity to embrace an extra dimension for the purpose of accommodating electromagnetic interactions.

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