

Abstract Submitted
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Time Dilation Effects in Kaluza's Classical Fifth Dimension L.L.

WILLIAMS, Konfluence Research Institute — Kaluza (1921) first showed that the laws of general relativity and electromagnetism could be obtained from general relativity in 5 dimensions. He originally viewed the fifth dimension as macroscopic, like the 3 spatial dimensions. To account for the absence of a visible fifth dimension, Klein (1926) proposed that the fifth dimension is compact and microscopic. No principle forces a compact dimension, however, and the absence of variation of fields along the fifth coordinate still leads to non-trivial constraints on particle motion. We discuss a test of the original classical, macroscopic interpretation of the fifth dimension through time dilation effects. We discuss how this result relates to the Reissner-Nordstrom metric and to the ADM mass.

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