

Abstract Submitted  
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**The Spacetime Between Einstein and Kaluza-Klein: Further Explorations** CHRIS VUILLE, Embry-Riddle Aeronautical University — Tensor multinomials can be used to create a generalization of Einstein's general relativity that in a mathematical sense falls between Einstein's original theory in four dimensions and the Kaluza-Klein theory in five dimensions. In the extended theory there are only four physical dimensions, but the tensor multinomials are expanded operators that can accommodate other forces of nature. The equivalent Ricci tensor of this geometry yields vacuum general relativity and electromagnetism, as well as a Klein-Gordon-like quantum scalar field. With a generalization of the stress-energy tensor, an exact solution for a plane-symmetric dust can be found where the scalar portion of the field drives early universe inflation, levels off for a period, then causes a later continued universal acceleration, a possible geometric mechanism for the inflaton or dark energy. Some new explorations of the equations, the problems, and possibilities will be presented and discussed.

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