The Space-Time Between Einstein and Kaluza-Klein: Further Developments CHARLES VUILLE, Embry-Riddle Univ — The idea of a multilinear metric can be generalized to elements of a subalgebra of the space of tensor multinomials, where the latter is dense in the space of smooth nonlinear differential operators. Whereas Kaluza-Klein theories increase the number of dimensions of space-time in order to accommodate more physical fields, here the spacetime remains four-dimensional, but the type of operator generalized to those that are non-multilinear. Using a small subalgebra of this space, the metric and curvature can be generalized in a way that explicitly contains Einstein's original theory and Maxwell's equations, as well as a scalar field. Thus it bears a resemblance to Kaluza-Klein and Brans-Dicke theories, but has a different underlying mathematical structure. The theory and attempts at the Lagrangian formulation, together with some possible consequences, will be presented.

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