1154-17-816 **Latham Boyle*** (lboyle@pitp.ca), 31 Caroline Street North, Waterloo, Ontario N2L 2Y5, Canada. *The standard model of particle physics: from noncommutative geometry or Jordan geometry?*

Ever since the early work of Kaluza and Klein a century ago, physicists have been intrigued by the idea that our 4-dimensional laws of physics may be unified geometrically as purely "gravitational" laws on some appropriate extension of ordinary four-dimensional spacetime. In the traditional Kaluza-Klein picture (which is incorporated in string theory), spacetime is augmented by an "internal space" which is imagined to be a continuous (usually 6-dimensional) manifold. An awkward feature of this picture is that it predicts an infinite number of particles/fields, in addition to the finite number we actually observe. In order to capture more directly the finite spectrum of particles we observe, it is natural to instead imagine that the internal space is some sort of finite/discrete space, and the problem is to determine what sort of space this should be. Following early work by Dubois-Violette, Kerner, Madore, and Connes 30 years ago, many subsequent authors have argued that the internal space is a kind of noncommutative geometry. I will suggest that a certain type of "Jordan geometry" (based on a certain Jordan algebra) may be more appropriate. (Received September 10, 2019)