Thinking Inside the Box Opens the Universe, Gravity and Cosmology in the Light of the SMPP and General Relativity

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Abstract. An experimentalist considers how the Standard Model of Particle Physics (SMPP) defines the real space-time of nature in the light of Einstein's General Relativity (EGR). In the discussion observation is preferred over mathematics and care is taken not to introduce other ideas which can only be demonstrated by arguments dependent on those ideas. The main conclusion reached is that the universe has a high probability of being open, a conclusion quite different from current fashionable models, denying both dark energy and the need for inflation. Because an inappropriate mathematical procedure has been followed in formulating dark energy models they should be rejected as unsound. A new procedure is proposed which leads to a simple open cosmology for the present era, one of the two eras suggested in a new "Two Era Cosmology" (TEC). Other parts of the discussion throw light on several aspects of gravity which cause confusion in more mathematical treatments. The paper can be thought of as providing the basis of many research proposals which the author is unable to follow through.