SI Supplementary Information

Supplementary Equations

**Distortional Extrema and Holes in the Geometric Manifold**

For the presently described spherically symmetric Maxwellian case, ϕ, the electrostatic potential, is a function of *r* alone, and the Maxwellian electromagnetic tensor and the associated field tensor **F1μ**can be constructed according to equation (3), where the only surviving field tensor components are (following the symbolism and development of Tolman17):

i.e.

(3)

The resultant field quantities are

(4)

Therefore, we see that the static-spherically-symmetric Maxwellian tensors exhibit the same stress and energy relationship as the geometric tensors17,

(5)

The present geometric-modeling endeavor, with its Maxwellian-tensor-form mimicking-component, has produced the fundamental and limiting agent for the currently-studied distorted geometry, namely a particular constraining functional relationship between the geometry-defining tensors (for an empty-space geometry, all of the components of the energy-momentum tensor are zero). In using this simple equation-of-state, equation (5), as a restricting distortional-model tensor relationship, we thereby elicit the metric-defining differential equations for such a family of geometric distortions.

The geometric-energy-density or field equations (2-5), after using solution Eq. (9), are repeated here (from16); also see17;

,

,

or

and

(6)

leading to

(7)

(8)

where

The field equations, in both the EM realm and the gravitational realm (*Q* = 0), exhibit *r-6* geometric behavior which we have interpreted as constituting a “magnetic monopole” mimic (what is a “magnetic monopole” ?).

References

16. D. Koehler, Geometric-Distortions and Physical Structure Modeling. *Indian J. Phys*. **87**, 1029 (2013).

17. R. Tolman, Relativity, Thermodynamics and Cosmology. Dover, NY, 248 (1987).