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LIST OF TOPICS

- Algebraic methods in geometry
- Differential geometry in the large
- Geometry and topology of differentiable manifolds
- General and algebraic topology
- Dynamical systems and their applications
- Geometric and topological methods in natural sciences

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Topological issues about the 6D ISST in Physics

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The recent proposals of a three-directional time [6], of a time vector [7], and of a 6D spacetime with $SO(3,3)$ symmetry [5], have renewed the interest for the hexadimensional extension of Einstein's General Relativity formulated two decades ago via three-dimensional time [1, 2, 3]. We wish to enrich the discussion about the hypothetical 6D geometrodynamics by giving a topological response to two fundamental questions: 1) Why should the spacetime manifold require six dimensions instead of four? 2) Why should the two extradimensions be timelike? The 4D universe is supported by an intuitive logic: in order to describe an *event*, we need to know *where* and *when* it is occurring, for a total amount of four coordinates (three spatial and one temporal). Although reasonable, the current representation of the spacetime's intimate structure could be incomplete: we suggest adding the *spin angular velocity* among its intrinsic properties. If we assume that each point of the continuum is a structureless rotating sphere of null radius, we obtain a 6D inherently spinning spacetime (acronym ISST). In the ISSTconstruction, we choose to neglect both the spinning magnitude and its direction (up or down), focusing only on the plane of rotation (perpendicular to the spinning axis) as essential information about *how* an event happens. The two parameters defining the orientation of the rotation plane of a spinning point are interpreted as *time* extradimensions because they are surely not spacelike (i.e., not related to the position in a fixed *Oxyz* reference frame) and, as surface measures, they are basically timelike [4]. Our geometric analysis raises open questions ranging from the observation of a preferential arrow of time to the role of temporal "hidden variables" in classic quantum phenomena.

REFERENCES

- [1] Enzo Bonacci. *General Relativity Extension*. Turin : Carta e Penna, 2006.
- [2] Enzo Bonacci. *Extension of Einstein's Relativity*, volume 42 of *Physical Sciences*. Rome : Aracne Editrice, 2007.
- [3] Enzo Bonacci. *Beyond Relativity*, volume 43 of *Physical Sciences*. Rome : Aracne Editrice, 2008.
- [4] Enzo Bonacci. Hypothetical six-dimensional reference frames. *International Journal of Mathematical Sciences and Applications*, 5(2) : 493–502, 2015.
- [5] David Chester et al. Beyond the standard model with six-dimensional spacetime. *arXiv*, e-Print : 2002.02391v2 [physics.gen-ph], 2020.
- [6] Günter Muchow. Is the Dimension Time Three-Directional?. *International Journal of Trend in Scientific Research and Development*, 4(5) : 514–522, 2020.
- [7] Christian Rakotonirina. Energy Vector and Time Vector in the Dirac Theory. *Preprints*, 2020070472, 2020.

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