Contents

Twistorialization involves several problems. Mention only the identification of the twistor space, the googly problem meaning that only second massless M^4 chirality allows geometrization in this way, the problem that massive fields do not allow twistorialization, and the problem that in general relativity only space-times with vanishing Weyl tensor allow twistor structure.

In the TGD framework, twistorialization should be performed for $H = M^4 \times CP_2$. Now there are no primary bosonic fields since they are represented in terms of the induced spinor connection and metric and also classical color fields are obtained by induction. Twistor lift was based on the replacement of space-time surfaces in $H = M^4 \times CP_2$ with the analogs of their 6-D twistor spaces X^6 as sphere bundles as a surfaces in the twistor space $T(H)$ of H identified as the product $T(M^4) \times T(CP_2)$ of twistor spaces H. In TGD, the replacement of $T(M^4) = CP_3$ with $CP_{2,1}$ having one hypercomplex coordinate is natural. Dimensional reduction for the extremals of 6-D Kähler action and the identification of the fiber spheres CP_1 of $T(M^4)$ and $T(CP_2)$ was needed to product to produce the X^6 as a sphere bundle over X^4.

Holography= holomorphy (H-H) vision in turn allows to solve the field equations for any general coordinate invariant action expressible in terms of the induced geometry allows to solve the field equations, which are extremely nonlinear partial differential equations, exactly by reducing them to purely algebraic local equations. The independence of action means universality. H-H vision conforms with $T(H)$ view but one can ask whether one could twist TGD without the introduction of $T(H)$ by representing the twistor spheres of $T(M^4)$ and $T(CP_2)$ as homologically non-trivial spheres of the causal diamond CD (missing the line connecting its tips) and CP_2. The second condition involved with the H-H principle would represent the identification of the twistor spheres.

In this article various problems of the twistorialization are discussed in the TGD framework and the question whether the H-H principle is enough for twistorialization is discussed.