
Twistors and TGD

Twistor approach to TGD

1. is motivated by
 - (a) Twistor Grassmann approach which has led to breakthrough in N= 4 SUSY and relies on 4-D conformal invariance having Yangian extension.
 - (b) the unique twistorial properties of $M^4 \times CP_2$
2. motivated by the fact that if fundamental fermions are massless and if bosons emerge as pairs of wormhole contacts consisting of fermion-anti-fermion pairs then
 - (a) residue integration over virtual momenta reduces generalized Feynman diagrams with fermion lines to diagrams with on mass shell fermions having non-physical helicities and propagator replaced with its inverse.
 - (b) there are good hopes about BCFW type recursion formulas for stringy variants of twistorial amplitudes using twistor Grassmannian.
3. suggests that the replacement of point-like particles with partonic 2-sur- faces implies the existence of an extension of 2-D superconformal symmetry to infinite- dimensional 4-D sym- metry having Yangian extension.
4. requires stringy version of twistorialization because induced spinor fields are localized to 2-D string world sheets and partonic 2-surfaces by well-definedness of em charge for spinor modes. This allows to to resolve the old problem due to the fact that stringy fermion- ic propagator carries fermion number in TGD and achieve manifest UV and IR finiteness.