

Holography= holomorphy principle allows to solve the extremely nonlinear partial differential equations for the space-time surfaces exactly by reducing them to algebraic equations involving an identically vanishing contraction of two holomorphic tensors of different types. In this article, space-time counterparts for elliptic curves and doubly periodic elliptic functions, in particular Weierstrass function, are considered as an application of the method.

Calabi-Yau manifolds are  $n$ -complex-dimensional generalizations of elliptic surfaces and recently found to emerge in a quantum field theory based model for energy production in the scattering of blackholes. This motivates the question whether the holography= holomorphy principle could allow the appearance of hyperbolic variant of K3 surface as 2-complex dimensional CY manifolds as analogs of lattice cells for periodic space-time surfaces, perhaps as nonlinear generalizations of 4-dimensional plane waves with the periods serving as counterparts of wave vectors. The space-time surfaces are identified as intersections of 2 6-D surfaces: could they correspond in some cases to hypercomplex variants of 3-complex-dimensional Calabi-Yau manifolds?

Partonic orbits as surfaces at which the Minkowskian signature of the metric transforms from Minkowskian to Euclidian are identified as orbits of partonic 2-surfaces. Holography= holomorphy vision allows to transform  $\det(g_4) = 0$  condition to a set 1-D Virasoro conditions labelled by points of the partonic 2-surface.