

Exceptional field theory: $SO(5,5)$

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Abstract

© 2015, The Author(s). Abstract: We construct Exceptional Field Theory for the group $SO(5, 5)$ based on the extended $(6+16)$ -dimensional spacetime, which after reduction gives the maximal $D = 6$ supergravity. We present both a true action and a duality-invariant pseudo-action formulations. All the fields of the theory depend on the complete extended spacetime. The U-duality group $SO(5, 5)$ is made a geometric symmetry of the theory by virtue of introducing the generalised Lie derivative that incorporates a duality transformation. Tensor hierarchy appears as a natural consequence of the algebra of generalised Lie derivatives that are viewed as gauge transformations. Upon truncating different subsets of the extra coordinates, maximal supergravities in $D = 11$ and $D = 10$ (type IIB) can be recovered from this theory.

[http://dx.doi.org/10.1007/JHEP06\(2015\)088](http://dx.doi.org/10.1007/JHEP06(2015)088)

Keywords

Gauge Symmetry, String Duality, Supergravity Models