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Maximal Supersymmetry, Light-Front Dynamics and Exceptional Symmetries

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Abstract

In this talk I describe some recent work by Kim, Ramond and myself where we formulate $\mathcal{N} = 8$ Supergravity in the light-front form. In this form the $E_{7(7)}$ symmetry, which in the covariant formulation is just a duality symmetry and a non-linear σ-model symmetry in the bosonic fields at the level of the equations of motion, is shown to be a genuine symmetry much like the SuperPoincaré symmetry and it is found that they are spanned on the same multiplet. Hence in this formulation the $E_{7(7)}$ symmetry transforms all the physical degrees of freedom. Finally I argue that this formalism is well suited to discuss possible counterterms in order to examine the divergence properties of the perturbation expansion, a much discussed issue these days.

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