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Non-Abelian Tensor Multiplet in 4D

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Abstract content

We give a solution to the long-standing problem of the supersymmetrization of non-Abelian tensors. Our system has three multiplets: (i) The usual non-Abelian vector multiplet (AμI , λI), (ii) A non-Abelian tensor multiplet (Bμν I , χI , φI), and (iii) A compensator vector multiplet (CμI , ρI). All of these multiplets are in the adjoint representation of a non-Abelian gauge group G. The CμI -field plays the role of a Stueckelberg compensator absorbed into the longitudinal component of the tensor BμνI. We give not only the component lagrangian, but also a corresponding superspace reformulation, reconfirming the total consistency of the system. We also couple this system to N = 1 supergravity, as an additional non-trivial confir- mation. The problem with quantization in non-supersymmetric cases may well be solved by N = 1 supersymmetry, because of its better quantum behavior than non-supersymmetric cases.

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