

N=1 supergravity Lagrangian from the Double Copy

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The Double Copy relations are a set of correspondences between (super) gravitational and (super) Yang-Mills theories which allow one to compute tree-level n -graviton scattering amplitudes from tree-level n -gluon ones. We try to extend this paradigm to the off-shell case by attempting the construction of the Lagrangian of $N=1$ Supergravity using an $N=1$ Yang-Mills theory and a non-supersymmetric Yang-Mills theory as building blocks. This is done by constructing Double Copy fields as suitable convolution products of the fields of the two Yang-Mills Theories. We also try to generalize the Double Copy to the case of higher-spin fields by means of the same construction.

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