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The Classical Double Copy and Twistors

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The last twenty years or so have given rise to an interesting relationship (known as the double copy) at the level of scattering amplitudes between non-abelian gauge theories (such as Yang-Mills theory) and quantum gravity theories. After half a decade, this duality was seen to be present in classical physics for exact solutions in classical Yang-Mills theory and general relativity. Ten years on, the classical double copy has seen tremendous attention and development. One such development is the application of twistor theory to the classical double copy; where we can express spacetime fields as infinite complex "lines"in twistor space, which can be used to generate new double copies. This talk will describe how this work has been extended to connect the momentum space double copy for scattering amplitudes with the position space double copy for classical fields; as well as its application to find a novel classical double copy for N=0 supergravity. This talk will be based on work done in arxiv:2303.04631.

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