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Correlation functions in N=4 super-Yang-Mills theory

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Correlation functions of local gauge-invariant operators are natural observables inany conformal quantum field theory.
In N=4 SYM a particular role is played by the multipoint supercorrelators of thestress-tensor multiplet.
Their chiral truncation in the light-cone limit coincides with the scattering superamplitudes.
We propose a novel approach to calculating such correlators based on the Lorentz-harmonic superspace.
This technique enables us to obtain the integrands of all such supercorrelators,including the non-chiral sector, at any loop order.

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