

# Renormalization Hopf algebras for gauge theories and BRST symmetries

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The structure of the Connes–Kreimer renormalization Hopf algebra is studied for Yang-Mills gauge theories, with particular emphasis on the BRST-formalism. A coaction of the renormalization Hopf algebra is defined on the coupling constants and the fields. In this context, BRST-invariance of the action implies the existence of certain Hopf ideals in the renormalization Hopf algebra, encoding the (physical) Slavnov-Taylor identities for the coupling constants.