

# A TRAP approach to Feynman rules

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In perturbative quantum field theory one has to evaluate the celebrated Feynman graphs to compute physically relevant quantities (e.g. cross sections). The Feynman rules prescribe how one associates a well-defined analytical object (typically a meromorphic function) to a Feynman graph. However, the Feynman rules are treated by physicists as just rules and are never shown to be well-defined. I will show how this problem can be given a precise mathematical framework, and how a new algebraic structure named TRAPs (for TRAcés and Permutations) could help answer this question. Finally, I will conjecture that a relevant analytical space has a TRAP structure guaranteeing that the Feynman rules of a simple quantum field theory are well-defined.

This talk will be non-technical and aiming at presenting important questions of the theory of TRAPs to non-experts.