

Mathematical Physics

Geometrically relating momentum cut-off and dimensional regularization

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The β function for a scalar field theory describes the dependence of the coupling constant on the renormalization mass scale. This dependence is affected by the choice of regularization scheme. I explicitly relate the β -functions of momentum cut-off regularization and dimensional regularization on scalar field theories by a gauge transformation using the Hopf algebras of the Feynman diagrams of the theories.

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