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The Nielsen Identities - a useful tool for showing gauge invariance

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Nielsen Identities are a generalisation of the Slavnov-Taylor identities which show the gauge parameter dependence of 1-PI diagrams. They are derived from a generalised BRST-invariance of the Lagrangian, in which the gauge parameter gets promoted to a scalar field. I will derive fermionic Nielsen Identities for generating functionals and proper vertex functions, and show how to use them both in general and in perturbation theory.

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