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Gribov Copies in Spaces with Non-trivial Topologies

Tesis para optar al grado académico
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por

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Abstract

In this thesis the arising of Gribov copies both in Landau and Coulomb gauges in regions with non-trivial topologies and flat metric, such as $S^1 \times D^2$ or $\mathbb{R} \times T^3$ and T^3, will be analyzed. Using a novel generalization of the "hedgehog ansatz" beyond spherical symmetry, analytic examples of Gribov copies of the vacuum will be constructed. Using such ansatz, we will also construct the elliptic Gribov pendulum. The requirement of absence of Gribov copies of the vacuum satisfying the strong boundary conditions implies geometrical constraints on the shapes and sizes of the regions with non-trivial topologies.