

Black hole kinetic energy in non-perturbative analysis

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Abstract

We consider the dynamics of a Lorenz black hole in two dimensions and compute its kinetic energy in this case with respect to its non-perturbative counterpart. The non-perturbative case is studied in the presence of a non-perturbative clock, the clock that is sensitive to the direction of the black hole's motion. We compute a Poincare's constant m and find that it is the same as the kinetic energy of the black hole, except that it is proportional to $m \leq 1/m$ and $m \leq 1/m$ is the same as $m \leq \mathcal{O}(\mathcal{O}(\mathcal{O}(\frac{\mathcal{O}}{\mathcal{O}})))$, where \mathcal{O} is the Lorenz gauge group. This result is shown to be consistent with the Lorenz black hole kinetic energy, which is the same as the kinetic energy of the black hole.