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Black hole solutions In Chern-Simons Gravity with Axion Hair

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Chern-Simons gravity with axions is revisited from the point of view of studying Kerr-like black hole solutions which take into account the back reaction of the axion field onto the spacetime geometry. We extend previous results by giving analytic expressions for slowly rotating black holes, which formally include an all order expansion in the pertinent coupling constant. We investigate potentially observable effects, e.g. the black hole angular-momentum reversal in the near horizon regime by the axion cloud surrounding the black hole, which occurs for sufficiently strong interaction coupling.

References:

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