

XXXV International Workshop on High Energy Physics "From Quarks to Galaxies: Elucidating Dark Sides"

Contribution ID : 24

Type : **not specified**

Black holes with electroweak hair

вторник, 28 ноября 2023 г. 16:50 (45)

We review the recent progress in constructing hairy black holes in the Einstein-Weinberg-Salam theory. These black holes are static and axially symmetric, they carry a magnetic charge and support non-linear Yang-Mills and Higgs fields outside the event horizon. Depending on the value of the magnetic charge, their mass and size vary from Planck values up to values typical for planetary mass black holes. Close to the horizon the electroweak symmetry is restored and geometry is Reissner-Nordstrom-de Sitter. The non-linear fields form an "electroweak corona" located far away from the horizon in the region where the geometry is almost flat. These solutions provide the first example of hairy black holes in a genuinely physical theory.

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Session Classification : Afternoon session 28/11/2023

Track Classification : Gravitation & Cosmology