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The Microscopic Black Hole Production at the LHC with CMS experiment

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The work is devoted to the study of microscopic black hole production with the CMS experiment at LHC. One of the predictions of theoretical models with extra spatial dimensions and low-scale quantum gravity is the possibility of production of microscopic black holes in particle collisions, in particular, at colliders. Based on the simulation with the BlackMax and the Charybdis2 event generators, I will present the analyses of different scenarios of microscopic black hole production at the LHC energy of 13 TeV. The obtained values of the cross sections for black holes, as well as for alternative objects of strong gravity (near-threshold quantum black holes, string balls) will be used to establish the experimental observability limits of these effects, which is an important and actual task for the long-term program of LHC on the search for new physics.

Primary author: Ms SEITOVA, Diana (LHEP JINR)

Presenter: Ms SEITOVA, Diana (LHEP JINR)

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