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Is it possible to create a quantum electromagnetic "black hole" at the Large Hadron Collider?

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As demonstrated by Chernodub, strong magnetic field forces vacuum to develop real condensates of electrically charged rho mesons, which form an anisotropic inhomogeneous superconducting state similar to Abrikosov vortex lattice. As far as electromagnetic field behaviour is concerned, this state of vacuum constitutes a hyperbolic metamaterial [1]. Here we demonstrate that spatial variations of magnetic field may lead to formation of electromagnetic "black holes" inside this metamaterial. Similar to real black holes, horizon area of the electromagnetic "black holes" is quantized in units of the effective "Planck scale" squared. The magnetic fields of the required strength and geometrical configuration may be created on Earth in heavy-ion collisions at the Large Hadron Collider. We evaluate electromagnetic field distribution around an electromagnetic "black hole" which may be created as a result of such collision.

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