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Pair Productions in Charged Black Holes

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Abstract: We study the spontaneous pair production, including the Schwinger mechanism and the Hawking radiation, of charged scalar particles from the near horizon region of (near) extremal charged black holes in the probe field limit. Analytical expressions for pair production, vacuum persistence and absorption cross section are found, and the spectral distribution is given a thermal interpretation. The pair production in near-extremal black holes has a factorization into the Schwinger effect in AdS and in Rindler space, measuring the deviation from extremality.

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