

Hawking radiation from double-copy

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Gravity and gauge theory are connected in a precise way through the double copy correspondence. While this relationship has been extensively explored in the context of perturbative scattering in vacuum, much less is understood about its non-perturbative features or its extensions to nontrivial backgrounds. In this work, we demonstrate how Hawking radiation in a collapsing spacetime—along with its characteristic thermal spectrum and horizon dependence—arises from the double copy of particle production in a background gauge field, where no global horizon or thermal spectrum exists. Our framework combines worldline and amplitude-based techniques, providing a unified perspective on several classical and quantum double copy constructions relevant to black hole spacetimes.

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