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34-Black Hole Fusion in Alternative Theories of Gravity

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Studying black hole fusion generally requires very powerful computational resources. Using a technique called the Extreme Mass Ratio approach (in which one of the black holes becomes infinite in size) it's possible to simulate black hole fusion in a straightforward manner, namely tracing the event horizon simply by looking at how geodesics (light rays) evolve around the black hole binary. This approach is pursued in the case of a small Schwarzschild black hole.
A characterization of the merger is then put forward, in which the duration of the merging event, the evolution of the width of the throat, and the difference between the surface area of the Schwarzschild black hole and its resulting projection in the final horizon are easily computed.
Finally, some considerations about the extension of this technique to black hole fusion in alternative theories of gravity (namely Scalar-Tensor-Vector Gravity) is undertaken.

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