Abstract Submitted
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Black hole peregrinations EANNA FLANAGAN, Cornell University — We consider the evaporation of a black hole of initial mass M_i, as monitored by observers who measure its position, mass, and momentum from its asymptotic gravitational field at a distance of order $\sim M_i^2$ in Planck units. As the black hole evaporates, each quanta of Hawking radiation will carry away some spatial momentum and will cause a slight recoil of the black hole. The net effect of this is a spreading of the black hole's wavefunction, first analyzed by Don Page in 1980. There are corresponding fluctuations in the asymptotically measured mass. We argue based on simple models that at the end of the evaporation process the black hole is spread out over a region of size $\sim M_i^2$ in both space and time. This effect complicates the usual sharp arguments for the information loss paradox, and seems to lead to a slight easing of the paradox.

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