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Simple Subsets of the Black Hole Interior¹ NETTA ENGELHARDT, Massachusetts Institute of Technology MIT

Hawking radiation is notoriously difficult to decode. It has been often speculated that not just Hawking modes but more generally local operators anywhere inside a black hole have high computational complexity in the dual CFT. Using the characteristic initial value problem in the bulk, I will argue that some parts of the black hole interior are simple to decode: that is, there are local operators in the black hole interior that are simply reconstructible in the CFT; in fact, any local operator that lives between the event horizon and a certain type of outermost marginally trapped surface will be simple. Complex operators are constrained to the region behind the outermost marginally trapped (or extremal) surface, which I will argue by consistency of the holographic dictionary (not assuming cosmic censorship) must lie behind an event horizon.

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