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(I) On the firewall puzzle

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Many of previous approaches for the firewall puzzle rely on a hypothesis that interior partner modes are embedded on the early radiation of a maximally entangled black hole. Quantum information theory, however, casts doubt on this folklore and suggests a different tale; the outgoing Hawking mode will be decoupled from the early radiation once an infalling observer, with finite positive energy, jumps into a black hole.

In this talk, I will provide counterarguments against current mainstream proposals and present an alternative resolution of the firewall puzzle which is consistent with predictions from quantum information theory. My proposal builds on the fact that interior operators can be constructed in a state-independent manner once an infalling observer is explicitly included as a part of the quantum system. Hence, my approach resolves a version of the firewall puzzle for typical black hole microstates as well on an equal footing.

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