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Memory Burden Effect in Black Holes and in de Sitter

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We discuss implications of an universal phenomenon of “memory burden”, which implies that information carried by a system tends to stabilize it. The effect is maximally prominent in objects of high microstate degeneracy. We discuss implications of this effect for black holes and for de Sitter cosmology. The memory burden effect leads to a slow-down of black hole decay, the latest by the time it emits about half of the initial mass. This opens up a new window for light primordial black hole dark matter. In de Sitter, the memory burden effect leads to quantum breaking, which has profound implications both for inflation as well as for dark energy. In particular, it excludes the cosmological constant from the energy budget of our Universe.

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