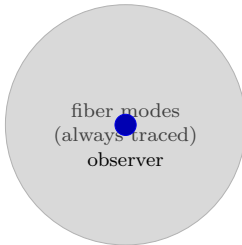


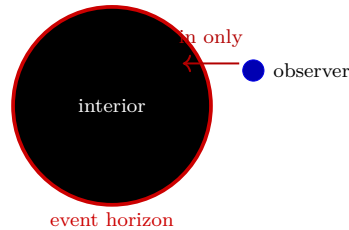
The Axiom You Cannot See in a Laboratory, Made Visible by a Horizon

Lab: OGGEF invisible



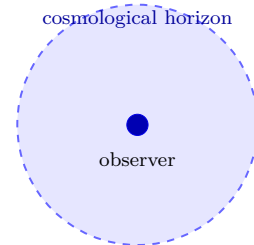
Trace operative but undirected; observer could “in principle” resolve further

Black hole: forced



Trace forced by causal structure; no technology can recover the interior

Cosmos: forced



Trace forced by cosmic expansion; outside recedes faster than light

Why this paper exists. The same partial trace, in three settings. In an ordinary laboratory (left) AX-3 operates everywhere and is operationally undirected — the trace runs over non-spatial fiber modes and no experiment reaches past it. At a black hole (center) the same trace is *forced*, by causal structure rather than by any limitation of technology: no instrument can recover the interior. In the cosmos (right) it is forced again, by expansion, for everything beyond the de Sitter horizon. In the middle and right panels the constitutional content of AX-3 stops being an axiom one accepts and becomes a geometry one can point at, and the black hole is the cleanest of the three. In full: Figure 8, p. 57.