Diagram: Structural Page Behavior

This diagram represents the evolution of the non-commuting region $\mathcal{R}(t) \subseteq \mathcal{C}$ over time.
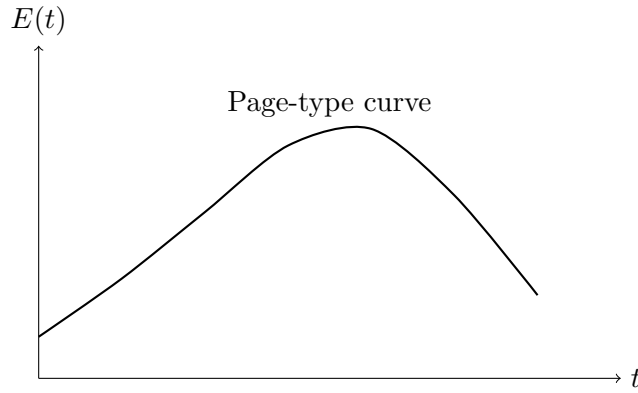
Early phase. $\mathcal{R}(t)$ expands. Observable entropy increases.

Late phase. $\mathcal{R}(t)$ contracts. Observable entropy decreases.

Let E be any entropy functional satisfying monotonicity under inclusion:

$$\mathcal{R}_1 \subseteq \mathcal{R}_2 \ \Rightarrow\ E(\mathcal{R}_1) \leq E(\mathcal{R}_2).$$

Then the expansion and contraction of $\mathcal{R}(t)$ produce a Page-type curve.

The rising branch corresponds to the expansion of non-commutation, while the falling branch corresponds to restoration of commutation. The argument is structural and independent of any specific entropic functional or microscopic dynamics.