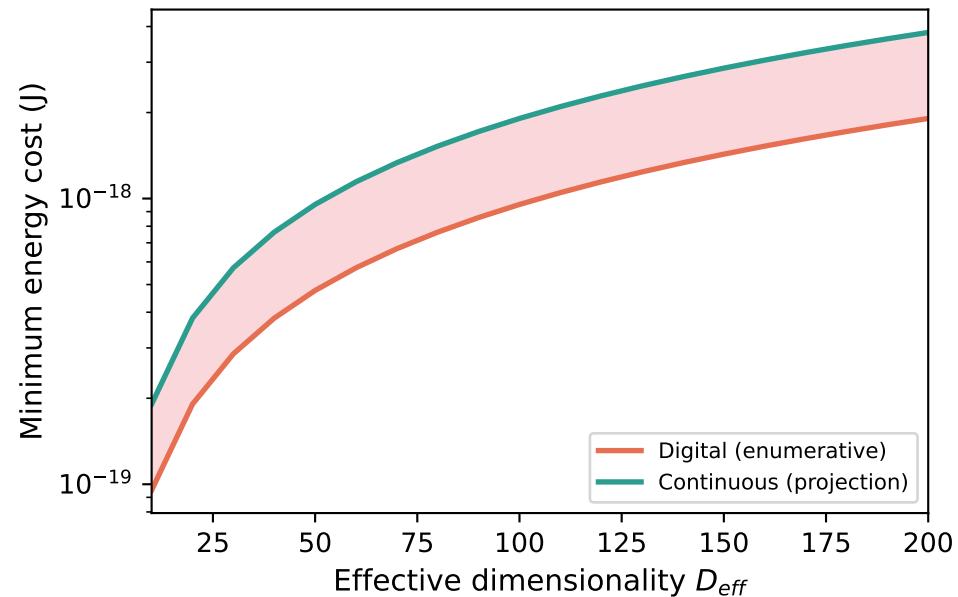
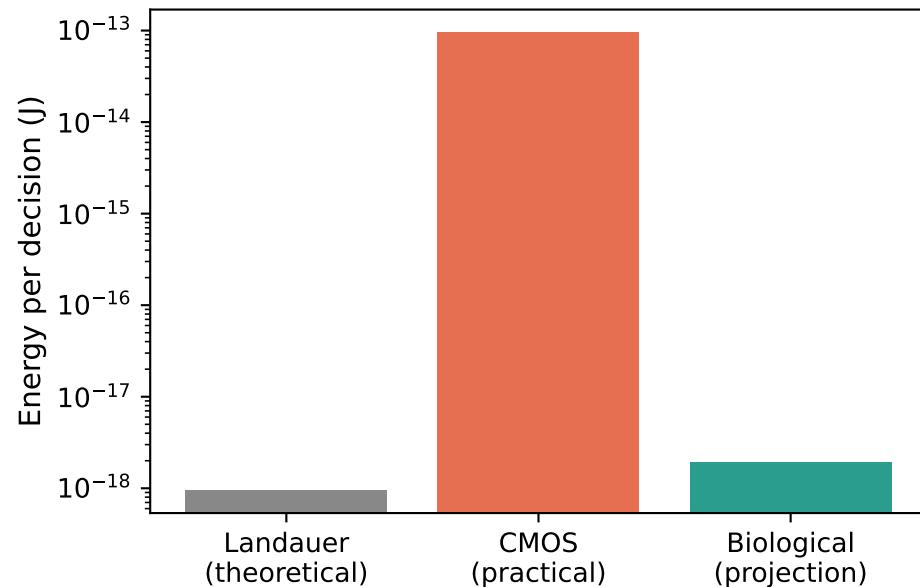


A. Energy Scaling: Digital vs Continuous



B. Practical Gap at $D_{\text{eff}} \approx 100$



WHY DIGITAL CANNOT INTEGRATE

DIGITAL

- Each input → bit
- Bit $\geq k_B T \ln 2$
- Amplify before process

CONTINUOUS

- Weak coupling to many
- Integrate before collapse
- Pay only at output



Digital: supra-Landauer at input
Cannot access sub-Landauer regime

EFFICIENCY COMPARISON

	Digital	Continuous
Energy	$\sim D \log k$	$\sim D \ln(L/\epsilon)$
Tracking	Explicit	Implicit
Input	$\geq k_B T \ln 2$	Sub-Landauer OK
Output	Bit-exact <i>Neither is "better"</i> <i>They solve different problems</i>	Approximate