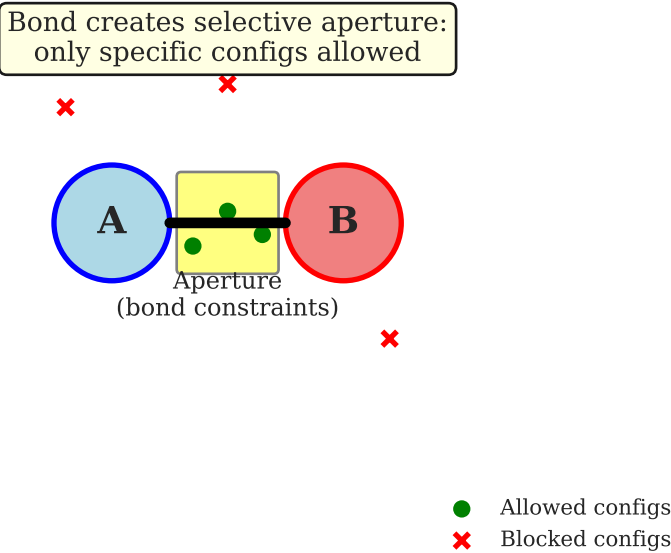


Panel F-C: Molecular Bonds as Categorical Apertures

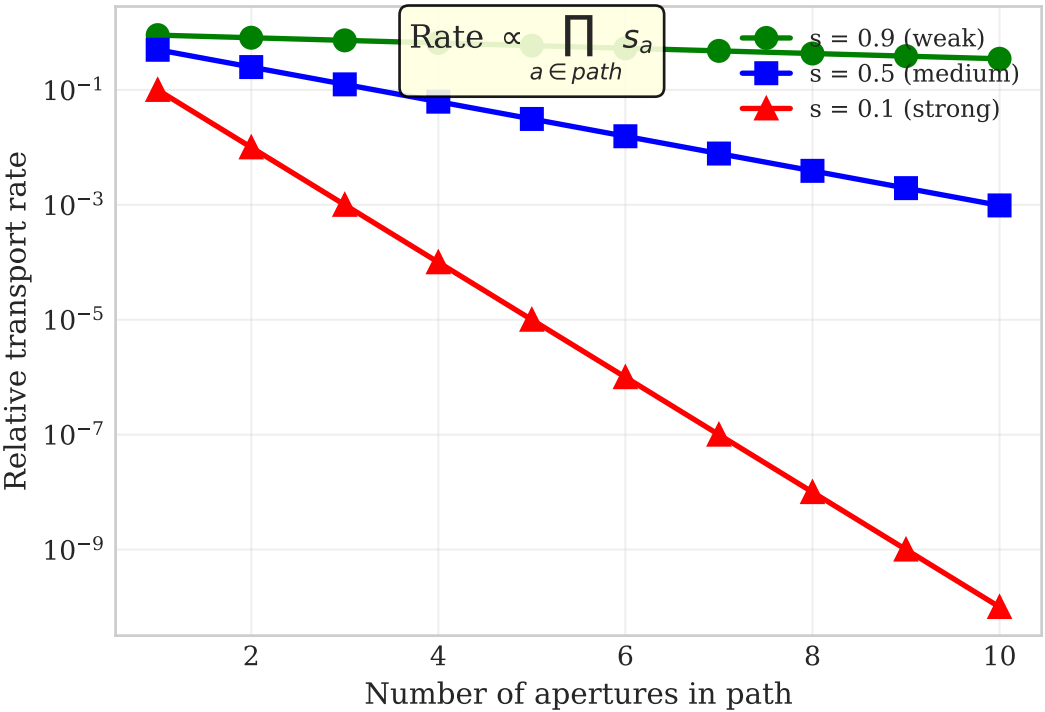
(A) Chemical Bond as Categorical Aperture



(B) Aperture Selectivity by Interaction Type

Interaction Type	Selectivity (s)	Potential (Φ/kT)	Energy (kJ/mol)
Covalent Bond	$\sim 10^{-4}$	~ 9.2	200-400
Ionic Bond	$\sim 10^{-3}$	~ 6.9	100-300
Hydrogen Bond	~ 0.1	~ 2.3	10-40
Dipole-Dipole	~ 0.3	~ 1.2	5-25
Van der Waals	~ 0.5	~ 0.7	0.5-5

(C) Transport Rate = Product of Selectivities



(D) Phase Transitions: Aperture Reconfiguration

