Basis-Dependent Emergent Geometry: Measurement Must Match Coupling
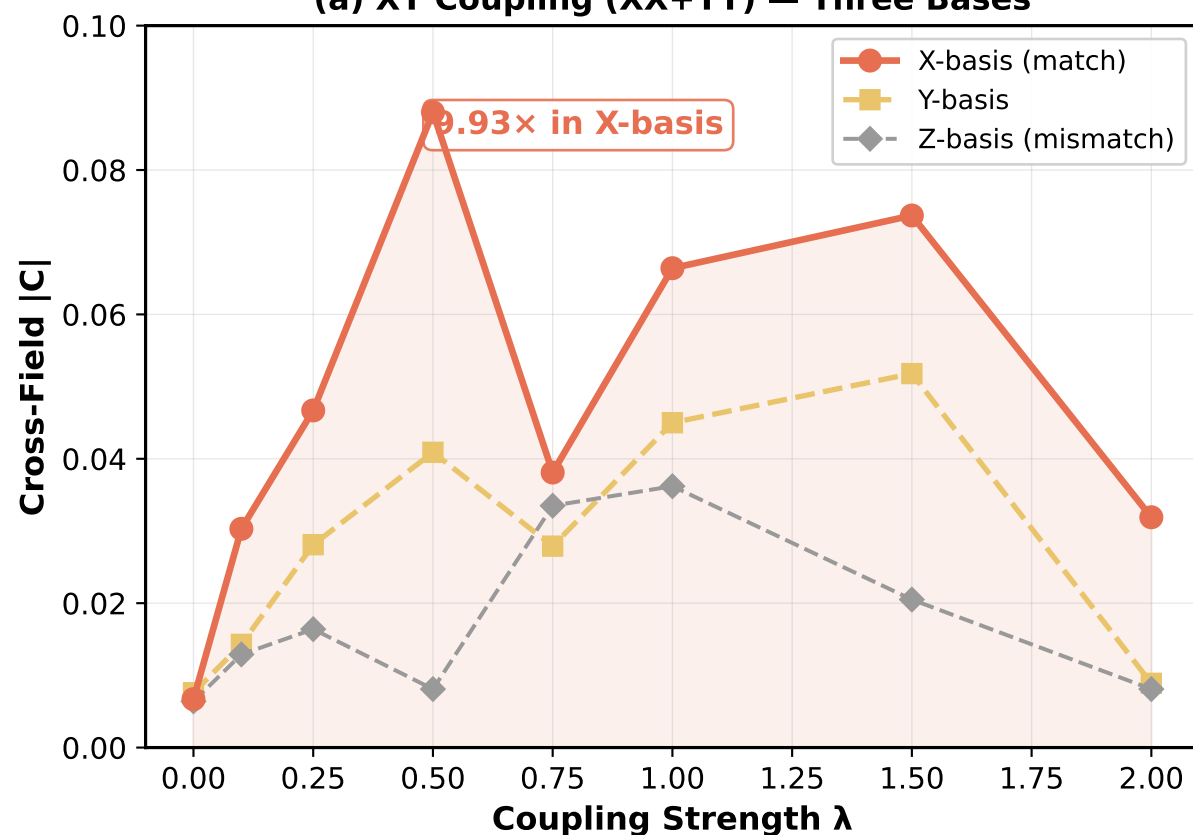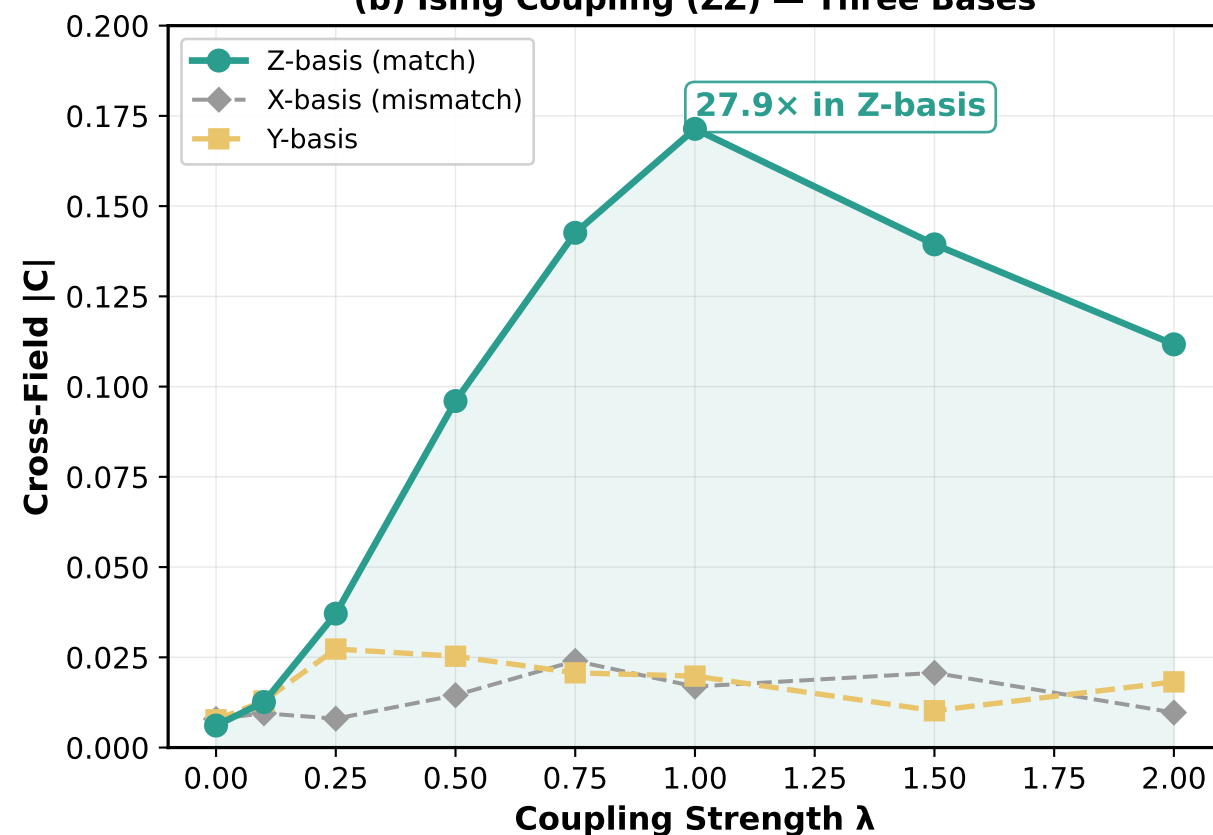## Andrew Thurlow · 528 Labs · IBM Torino
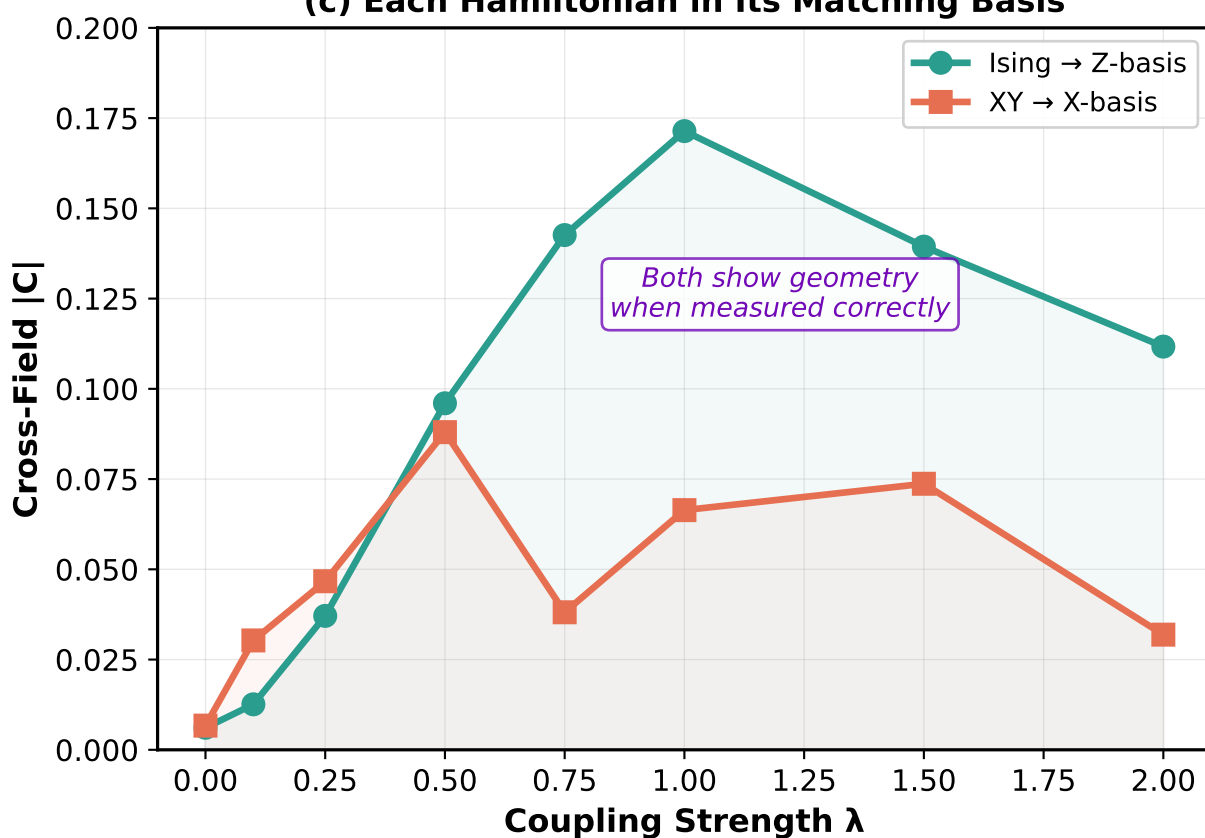

(a) XY Coupling (XX+YY) — Three Bases
- X-basis (match)
- Y-basis
- Z-basis (mismatch)

9.93× in X-basis

(b) Ising Coupling (ZZ) — Three Bases
- Z-basis (match)
- X-basis (mismatch)
- Y-basis

27.9× in Z-basis

(c) Each Hamiltonian in Its Matching Basis
- Ising → Z-basis
- XY → X-basis

Both show geometry when measured correctly

(d) Geometry Requires Matching Basis

27.9×   2.15×   9.93×   5.66×

Ising Z-basis   Ising X-basis   XY X-basis   XY Z-basis