ZNE: Zero-Noise Extrapolation

Quantum Error Mitigation Summary

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Overview

Zero-Noise Extrapolation (ZNE) mitigates noise by executing circuits at scaled noise levels and extrapolating to the zero-noise limit.

Mathematics

Let $A(\lambda)$ be the observable measured at noise level λ. Assuming $A(\lambda) \approx A_0 + a_1\lambda + \cdots + a_n\lambda^n$, we can fit a polynomial and compute A_0 by Richardson extrapolation.

Implementation

- Scaling is done with `fold_global()` or `fold_all()`.

- Extrapolation via `RichardsonFactory()`.