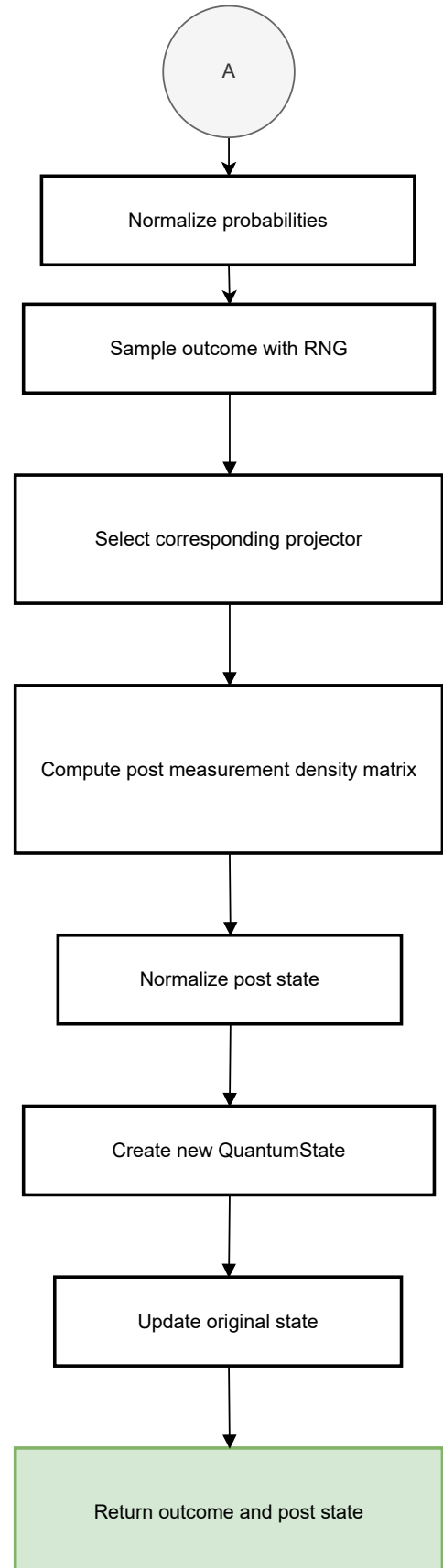


This function performs a projective quantum measurement on a selected subset of qubits.

It computes the measurement probabilities, samples a classical outcome, and updates the quantum state to the corresponding post-measurement state.



Start povm_measure

Input state operators qubits rng

Convert state to density matrix

Operators act on subset
?

No

Yes

Use operators as full system

Expand operators to full system

Compute outcome probabilities

Normalize probabilities

Sample outcome with RNG

A

This function performs a generalized quantum measurement using POVM operators.
It supports both full-system and subsystem measurements and updates the quantum
state based on the selected Kraus operator.

A

Select Kraus operator

Compute post measurement density matrix

Normalize post state

Create new QuantumState

Update original state

Return outcome and post state

This method applies a single-qubit gate to the quantum state and optionally applies noise channels.

It models both ideal and noisy quantum evolution.

