

Problem 4 Quantum Democracy

Entanglement, collaboration, and trust

Explore what quantum correlations can and cannot contribute to collective decision-making.

The theme

Create an interactive experiment or prototype inspired by voting, collective decisions, or trusted participation. Use Qiskit to investigate entangled states, such as GHZ states, measurement correlations, and relevant protocol choices. Demonstrate a meaningful quantum principle in a compelling civic or collaborative setting.

Ideas to explore

- Could a shared-state experiment become part of a voting-themed game?
- What would users need to verify before trusting a collective outcome?

Prototype requirements

Demonstrate a functional voting-themed interaction or experiment, a meaningful entanglement or correlation circuit, and a clear statement of which properties the prototype does and does not demonstrate.

Scope note. Entanglement alone does not guarantee vote anonymity, election integrity, eligibility, or tamper resistance. Do not describe the project as a complete secure election protocol unless its security properties have been established.

Judging criteria

- Quantum understanding and correct use of entanglement: 30 points
- Protocol logic and demonstrated properties: 25 points
- Originality of the experience: 20 points
- Working implementation: 15 points
- Critical evaluation and communication: 10 points