New test with quantum coins & computers for quantum sensing

March 24, 2020
Source: *PIB*

Recently **Researchers from Raman Research Institute (RRI), an autonomous institution under the Department of Science & Technology,** have devised a new test **for fairness of quantum coin or 'qubit'** (the basic unit of information in a quantum computer) using **entanglement theory.**

Key highlights

- This is a significant contribution to quantum state discrimination, an essential aspect of quantum information science which is expected to influence quantum sensing.
- The new test uses entanglement to test the fairness of the quantum coin.
- **Entanglement is a special type of correlation that exists in the quantum world with no classical counterpart.** The researchers from RRI made use of this quantum resource to arrive at a test for fairness of a quantum coin (a qubit). Their strategy, which makes use of entanglement, enables better discrimination between quantum states. Such advantage is valuable in quantum sensors.

Significance of Quantum Information and Quantum Computing Technology

- The domain of Quantum Information and Quantum Computing Technology is a growing area of research which is expected to **influence Data Processing**, which in turn, plays a central role in our lives in this Information Age.

- For instance, bank transactions, online shopping and so on crucially depend on the efficiency of information transfer.
- Thus the recent work on quantum state discrimination is expected to be valuable in people’s lives in the current era.

Difference between normal computing and Quantum computing

- All computing systems rely on a fundamental ability to store and manipulate information. Current computers manipulate individual bits, which store information as binary 0 and 1 states.
- Quantum computers leverage quantum mechanical phenomena to manipulate information. To do this, they rely on quantum bits or qubits.