



## GOOGLE WILLOW CHIP : SCIENCE & TECHNOLOGY

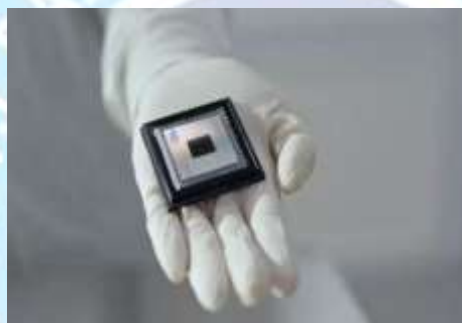
**NEWS:** *Willow is a small chip for Google but a quantum leap for computing*

### WHAT'S IN THE NEWS?

Google's **Willow Quantum Processor** with 105 qubits demonstrated a significant advancement in quantum computing by solving computationally hard tasks faster than classical computers. It features improved error correction, faster performance, and operates at near absolute zero temperatures.

### About Willow Quantum Processor

- **Qubits:** 105 physical qubits, capable of quantum superposition.
- **Temperature:** Operates at near absolute zero (-273.15°C) for stability.
- **Error Correction:** Uses protocols like the **Surface Code Method** to detect and fix errors.
- **Performance:** Outperformed classical computers using **Random Circuit Sampling (RCS)**.
- **Coherence Time:** Improved to 100 microseconds for qubits.



### Why It Matters

- **Qubits vs. Bits:** Quantum computers leverage qubits for greater computational power than classical computers using bits.
- **Challenges:** Qubits are fragile and require advanced error correction to function efficiently.

**Source:** <https://www.thehindu.com/sci-tech/technology/google-willow-quantum-processor-how-it-works-why-it-matters/article69045530.ece>

SINCE 2006