

DNA

04 May, 2017

Pag No. 09

World's first quantum computing machine built in China

Researchers say quantum computing could in some ways dwarf processing power of supercomputers

Chinese scientists have successfully built the world's first quantum computing machine that is 24,000 times faster than its international counterparts and may dwarf the processing power of existing supercomputers.

The scientists announced their achievement at a press conference at the Shanghai Institute for Advanced Studies of University of Science and Technology of China.

Quantum computing could in some ways dwarf the processing power of today's supercomputers, according to researchers.

The manipulation of multi-particle entanglement is the core of quantum computing technology and has been the focus of international quantum computing research.

Recently, Pan Jianwei of the Chinese Academy of Sciences, Lu Chaoyang and Zhu Xiaobo of the University of Science and Technology of China and Wang Hao-



Quantum computers could, in principle, solve certain problems faster than classical computers

hua of Zhejiang University set international records in the quantum control of the maximal numbers of entangled photonic quantum bits and entangled superconducting quantum bits.

Pan said quantum computers could, in principle, solve certain

problems faster than classical computers.

Despite substantial progress in the past two decades, building quantum machines that can actually outperform classical computers in some specific tasks - an important milestone termed "quan-

tum supremacy" — remains challenging. In the quest for quantum supremacy, Boson sampling — an intermediate quantum computer model — has received considerable attention, as it requires fewer physical resources than building universal optical quantum computers, Pan was quoted as saying by the state-run Xinhua news agency.

Last year, the researchers had developed the world's best single photon source based on semiconductor quantum dots.

Now, they are using the high-performance single-photon source and electronically programmable photonic circuit to build a multi-photon quantum computing prototype to run the Boson sampling task.

The test results show the sampling rate of this prototype is at least 24,000 times faster than international counterparts. The research was published in the journal *Nature Photonics*. —PTI