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Critical component of quantum computing discovered

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**Non-silicon based computing on the horizon**

**Researchers** at the UK's Edinburgh and Manchester universities have recently created a non-silicon based molecular device which could serve as the foundation for very powerful and practical quantum computers.

The highly parallel concept of quantum computing has been around for quite some time. It basically idealizes itself around the use of quantum binary digits, or qubits, which are far more complex than typical 1 or 0 ("on" or "off") bits as they are capable of representing a range of values simultaneously. However, one of the major challenges presented to researchers has been the search for a practical medium in which this new form of computing can

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be implemented.

According to Professor David Leigh, of Edinburgh University's school of chemistry, "the major challenges we face now are to bring many of these qubits together to build a device that could perform calculations, and to discover how to communicate between them." Moreover, the complexity of the qubit will enable quantum computers to perform more quickly than conventional machines in a process known as quantum parallelism. "This development brings super-fast, non-silicon based computing a step closer," he added.

The molecular device discovered was found by combining tiny magnets with molecular machines that can transport between two locations without the use of external force. In effect, these maneuverable magnets may one day be used as the basic component of quantum computing.

On another note, the study was funded by the European Commission and published in Nature, a weekly international science journal.



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