

May 26, 2005

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## **The Special Purpose Computer Developed Jointly with the US Started Operation**

The special purpose computer dedicated to QCD (Quantum Chromo Dynamics) with 10 teraflops (capable of 10 trillion floating point operations per second) was completed.

This special purpose computer has been developed by the RIKEN Brookhaven Research Center (RBRC) jointly with Columbia University, USA, and the Brookhaven National Laboratory (BNL), USA, and started operation at the RBRC in the BNL in May.

This special purpose computer named "QCDOP (Quantum Chromo Dynamics On a Chip)" has limited its application only to theoretical calculation of the dynamics (quantum chromo dynamics) of fundamental particles "quarks", which compose protons and neutrons, and particles "gluons", which propagate the strong interactions, thereby enhancing performance and efficiency. The theoretical peak performance is 10 teraflops, and even the normal operation condition provides about half of the performance.

In terms of hardware, QCDOC consists of 192 motherboards and each of them has 64 computing nodes, each of which as a unit includes dedicated ICs capable of one billion floating point operations per second.

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