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IBM and Georgia Institute of Technology Claim to Have Developed the Fastest 'Frozen Chip'

The new technology could become the core of a new series of powerful, low-energy chips

IBM Corp. and the Georgia Institute of Technology yesterday announced they have surpassed the silicon speed record by developing a so called "frozen chip", informs Hardware Zone. The researchers said that this new technology could become the core of a new series of powerful, low-energy chips which will support enhanced applications such as HDTV onto mobiles and other small size devices. It seems that IBM and Georgia Tech have created and demonstrated the capabilities of their silicon-based chip which "is capable of operating at frequencies above 500 GHz by cryogenically "freezing" the circuit to minus 451 degrees Fahrenheit (4.5 Kelvins)," writes Hardware Zone. In order to understand the revolution brought by IBM and Georgia Tech, you should know that the 500 GHz frequency is more than 250 times faster than all the mobiles available on the market, which can reach only 2 GHz. "For the first time, Georgia Tech and IBM have demonstrated that speeds of half a trillion cycles per second can be achieved in a commercial silicon-based technology, using large wafers and silicon-compatible low-cost manufacturing techniques," John Cressler, Byers Professor in Georgia Tech's School of Electrical and Computer Engineering, and a researcher in the Georgia Electronic Design Center at Georgia Tech, said in a statement. IBM's representatives said that this research was initiated as being part of a larger plan which regards testing the maximum speed limits reached by silicon germanium (SiGe) devices that seem to function much better at low temperatures. In addition, IBM's officials stated that they used chips with embedded prototype of a fourth-generation SiGe technology developed by IBM on 200-mm wafers and that, at indoor temperature, the circuits operated at approximately 350 GHz. "This groundbreaking collaborative research by Georgia Tech and IBM redefines the performance limits of silicon-based semiconductors," Bernie Meyerson, vice president and chief technologist at IBM Systems and Technology Group, said in the same statement. It seems that ultrahigh-frequency SiGe circuits can be used in several specialized industries such as communications systems, military electronics, space and remote sensing.