

Smallest Dutch supercomputer

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A team of scientists from the Netherlands has built a supercomputer the size of four pizza boxes. The Little Green Machine II has a computing power of more than 10,000 ordinary PCs. Credit: Simon Portegies Zwart (Leiden University)

A team of Dutch scientists has built a supercomputer the size of four pizza boxes. The Little Green Machine II has the computing power of 10,000 PCs and will be used by researchers in oceanography, computer science, artificial intelligence, financial modeling and astronomy. The computer is based at Leiden University (the Netherlands) and developed with help from IBM.

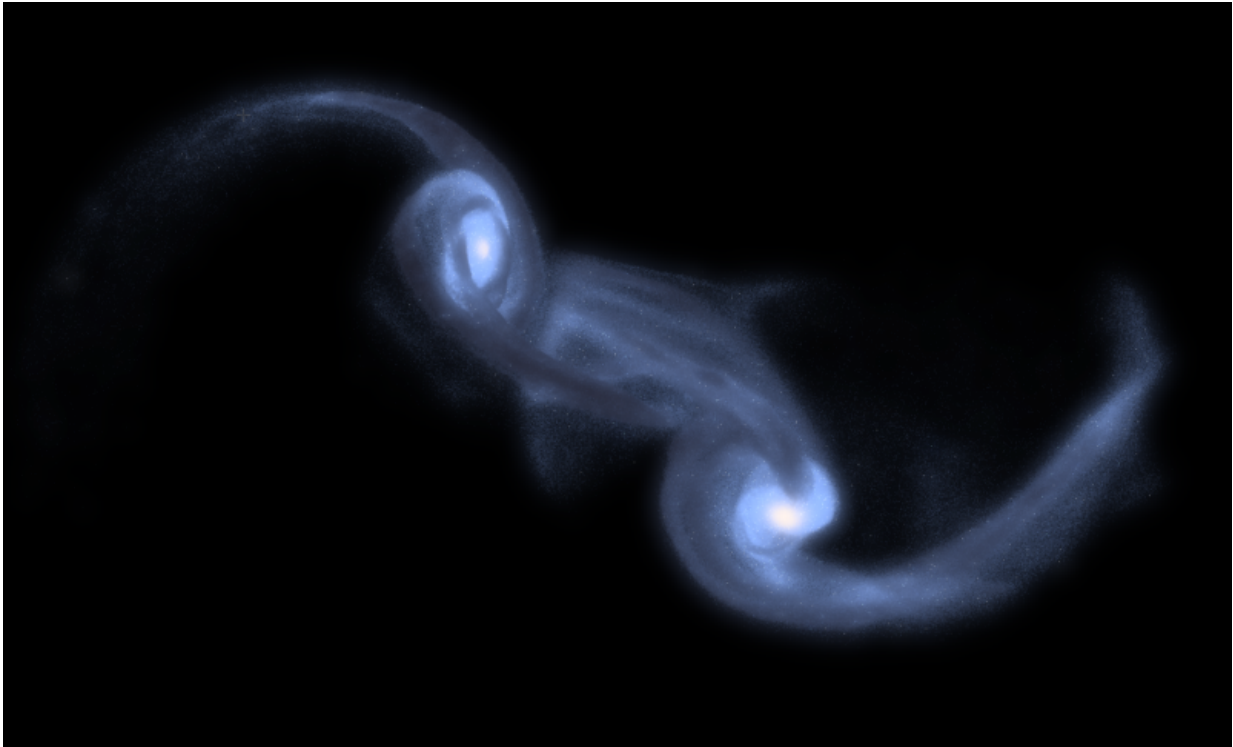
The supercomputer has a [computing power](#) of more than 0.2 Petaflops. That's 200,000,000,000,000 calculations per second. Thereby this supercomputer equals the computing power of more than 10,000 ordinary PCs.

The researchers constructed their supercomputer from four servers with four special graphics cards each. They connected the PCs via a high-speed network. Project leader Simon Portegies Zwart (Leiden University): "Our design is very compact. You could transport it with a carrier bicycle. Besides that we only use about 1% of the electricity of a similar large supercomputer."

Unlike its predecessor Little Green Machine I the new supercomputer uses professionalized graphics cards that are made for big scientific calculations, and no longer the default video cards from gaming computers. The machine isn't based on the x86 architecture from Intel anymore either, but uses the much faster OpenPower architecture developed by IBM.

Astronomer Jeroen Bédorf (Leiden University): "We greatly improved

the communication between the graphic cards in the last six months. Therefore we could connect several cards together to form a whole. This technology is essential for the construction of a supercomputer, but not very useful for playing video games."



To test the new, small supercomputer, the researchers simulated the collision of the Milky Way with the Andromeda Galaxy. This clash will take place in about four billion years. Credit: Jeroen Bédorf (Leiden University)

To test the little supercomputer the researchers simulated the collision between the Milky Way and the Andromeda Galaxy that will occur in about four billion years from now. Just a few years ago the researchers performed the same simulation at the huge Titan Computer (17.6 petaflops) at Oak Ridge National Laboratory (USA). "Now we can do

this calculation at home," Jeroen Bédorf says, "That's so convenient."

Little Green Machine II is the successor of Little Green Machine I that was built in 2010. The new small [supercomputer](#) is about ten times faster than its predecessor which is retiring as of today. The name Little Green Machine was chosen because of its small size and low power consumption. In addition, it is a nod to Jocelyn Bell Burnell who discovered the first radio pulsar in 1967. That pulsar, the first ever discovered, got nicknamed LGM-1 where LGM stands for Little Green Men.

Provided by Netherlands Research School for Astronomy

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