

New technology may cool the laptop, prof says (w/ Video)

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Does your laptop sometimes get so hot that it can almost be used to fry eggs? New technology may help cool it and give information technology a unique twist, says Jairo Sinova, a Texas A&M University physics professor.

Sinova and colleagues from Hitachi Cambridge Laboratory, Institute of Physics ASCR, University of Cambridge and University of Nottingham have had their research published in the renowned journal [Nature Physics](#).

Laptops are getting increasingly powerful, but as their sizes are getting smaller they are heating up, so how to deal with excessive heat becomes a headache, Sinova explains.

"The crux of the problem is the way information is processed," Sinova notes. "Laptops and some other devices use flows of electric charge to process information, but they also produce heat.

"Theoretically, excessive heat may melt the [laptop](#)," he adds. "This also wastes a considerable amount of energy."

Is there a solution?

One approach may be found in Sinova's research - an alternative way to process information.

"Our research looks at the [spin](#) of electrons, tiny particles that naked eyes cannot detect," the Texas A&M professor explains. "The directions they spin can be used to record and process information."

To process information, Sinova says, it is necessary to create information, transmit the information and read the information. How these are done is the big question.

"The device we designed injects the electrons with spin pointing in a particular direction according to the information we want to process, and then we transmit the [electrons](#) to another place in the device but with the spin still surviving, and finally we are able to measure the spin direction via a voltage that they produce," Sinova explains.

The biggest challenge to creating a spin-based device is the distance that the spins will survive in a particular direction.

"Transmission is no problem. You can think for comparison that if the old devices could only transmit the information to several hundred feet away, with our device, information can be easily transmitted to hundreds of miles away," he says. "It is very efficient."

Talking about its practical application, Sinova is very optimistic. "This new device, as the only all-semiconductor spin-based device for possible information processing, has a lot of real practical potential," he says. "One huge thing is that it is operational at room temperature, which nobody has been able to achieve until now. It may bring in a new and much more efficient way to process information."

Source: Texas A&M University

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