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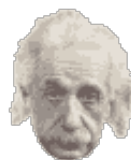
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## Nanotechnology + Superconductivity = Spintronics

Posted by **timothy** on Sat May 07, '05 08:44 PM

from the **idea-whose-time-keeps-coming dept.**

**karvind** writes "*Spintronics is a nanoscale technology in which information is carried not by the electron's charge, as it is in conventional microchips, but by the electron's intrinsic spin and if a reliable way can be found to control and manipulate the spins spintronic devices could offer higher data processing speeds, lower electric consumption, and many other advantages over conventional chips-- including, perhaps, the ability to carry out radically new quantum computations. PhysOrg is reporting that University of Notre Dame physicist Boldizsar Janko and his colleagues have found a way to achieve this control using a magnetic semiconductor, insulator and superconducting material stack of thicknesses of order of few dozen nanometers. IBM and Stanford are also looking into spintronics.*"



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Read an article on this topic in Physics Today.

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The Fine Print: The following comments are owned by whoever posted them. We are not responsible for them in any way.

**Need Wikipedia Update?** (Score:5, Interesting)by [Silverlancer \(786390\)](#) on Saturday May 07, @08:45PM (#12465055)

Seems like one of the [Unsolved Problems in Physics](#) [wikipedia.org] isn't exactly unsolved anymore.

**Re:Need Wikipedia Update?** (Score:4, Informative)by [Rosco P. Coltrane \(209368\)](#) on Saturday May 07, @08:57PM (#12465106)

*Seems like one of the Unsolved Problems in Physics isn't exactly unsolved anymore.*

Re-read TFA where it says "Boldizsar Janko and his colleagues believe they have found such a control technique" and "Although Janko and his colleagues have tested their approach so far only through computer simulations".

Not exactly a practical, demonstrated technology yet. Wikipedia is therefore current.

[ Parent ]

- [Re:Need Wikipedia Update?](#) by Quantum Fizz (Score:3) Saturday May 07, @09:05PM
- [Spintronics and the Chinese Threat](#) by Anonymous Coward (Score:-1) Saturday May 07, @09:21PM

**Spintronics?** (Score:5, Funny)by [EtherAlchemist \(789180\)](#) on Saturday May 07, @08:46PM (#12465058)

(<http://thoughtcreep.blogspot.com/?f=s> | Last Journal: [Wednesday March 30, @12:24AM](#))

Are you SURE this isn't a technology developed jointly by the press and the White House?

- [Re:Spintronics?](#) by eobanb (Score:2) Saturday May 07, @11:50PM
- [Re:Spintronics?](#) by Anonymous Coward Sunday May 08, @09:33AM

**Microsoft in on this, too** (Score:5, Funny)by [AthenianGadfly \(798721\)](#) on Saturday May 07, @08:47PM (#12465067)

Microsoft is reportedly already somewhat advanced in spintronics. A company official reportedly said "We consider ourselves to be industry leaders when it comes to manipulation using spin."

- [Re:Microsoft in on this, too](#) by sim82 (Score:1) Sunday May 08, @11:18AM

**DIY?** (Score:2, Funny)by [Doc Ruby \(173196\)](#) on Saturday May 07, @08:47PM (#12465068)

(<http://slashdot.org/~Doc%20Ruby/journal> | Last Journal: [Thursday March 31, @02:48PM](#))

What's the cheapest device that I, a layman, can buy to set the spin of large amounts of electrons (several coulombs per second) to a certain value?

- [Re:DIY?](#) by kyle90 (Score:1) Saturday May 07, @08:50PM  
[Re:DIY?](#) by Anonymous Coward Saturday May 07, @09:38PM  
[Re:DIY?](#) by Decaff (Score:2) Sunday May 08, @12:00PM

**Re:DIY?** (Score:4, Funny)

by [Rosco P. Coltrane \(209368\)](#) on Saturday May 07, @08:53PM (#12465089)

*What's the cheapest device that I, a layman, can buy to set the spin of large amounts of electrons*

A fridge magnet.

*(several coulombs per second) to a certain value?*

A very big, precisely calibrated fridge magnet.

[ [Parent](#) ]

[Re:DIY?](#) by Doc Ruby (Score:2) Saturday May 07, @08:58PM

- [Re:DIY?](#) by DarkMan (Score:3) Saturday May 07, @09:42PM
- [Re:DIY?](#) by Un pobre guey (Score:2) Saturday May 07, @09:43PM
  - [Re:DIY?](#) by DrLudicrous (Score:2) Sunday May 08, @07:59AM
- [Re:DIY?](#) by Quantum Fizz (Score:3) Saturday May 07, @10:21PM
  - [Re:DIY?](#) by Doc Ruby (Score:3) Saturday May 07, @10:29PM
    - [Re:DIY?](#) by Quantum Fizz (Score:3) Saturday May 07, @10:42PM
      - [Re:DIY?](#) by Doc Ruby (Score:2) Saturday May 07, @10:52PM

**Re:DIY?** (Score:4, Informative)

by [Quantum Fizz \(860218\)](#) on Sunday May 08, @12:47AM (#12466048)

(Last Journal: [Friday March 18, @07:58PM](#))

Electron spin is NOT the same phenomenon as orientation of magnetic field. But you can think of it the following way. An electron is a tiny magnetic dipole. The potential energy of a dipole in a magnetic field is the inner product  $-\mu \cdot B$ . Where  $\mu$  is the dipole moment (Bohr Magneton in the case of an electron),  $B$  is the magnetic field. The dipole wants to go to the lowest energy state, which is aligned with the field (negative energy).

Quantum mechanics forces a measure of the electron's spin (and hence the direction of the dipole moment) into one of the allowable eigenstates. For a spin-1/2 fermion, such as an electron, there are only two states.

now - if you apply a field in the z direction and measure the spin in the z direction, there is a definite preference for the spin to align with the field.

if you apply the field in the y direction and measure

in the z direction, then both states are of equal energies and there is no preference.

If you turn on interactions between electrons, like ferromagnetic or anti-ferromagnetic coupling, you get interesting effects, especially at points where there the electron-electron interaction is countered by the field, and you have phase transitions at that point. if you allow for different couplings, different field directions, you can build up very rich phase diagrams of such systems, which are actually being studied by top physicists today.

Eg - anti-ferromagnetic interactions (neighbors want to be anti-aligned) on a triangle lattice is a frustrated magnet. A spin will be up, another neighbor will be down, the third is equally frustrated and doesn't know where to go. This makes very degenerate ground states, which have interesting properties.

[ Parent ]

- [Re:DIY?](#) by Stephen H-B (Score:2) Sunday May 08, @12:59AM

**Re:DIY?** (Score:5, Informative)

by [Quantum Fizz \(860218\)](#) on Saturday May 07, @09:02PM ([#12465129](#))

(Last Journal: [Friday March 18, @07:58PM](#))

*What's the cheapest device that I, a layman, can buy to set the spin of large amounts of electrons (several coulombs per second) to a certain value?*

Here's a semi-serious reply to your obviously tongue-in-cheek question. I'll assume by 'certain value' you mean direction, since the total spin of an electron is fixed to  $\hbar/2$ .

It depends how many spins you want to align, what percentage of the total number of spins you want to align, and how accurately you want to control the direction the spins are aligned to. In a nutshell a magnet will align the spins, cooling will also align the spins (for ferromagnets and antiferromagnets). doing both will do it faster and give more control. But that adds to the cost.

At absolute zero the slightest applied magnetic field to a paramagnetic system will line the spins entirely along the direction of the applied field.

If you get a ferromagnet, you only need to cool below the curie point and then apply a field to get the spins aligned. You'll need to go to a stronger field than above to overcome the hysteresis, though.

As someone said above, a simple refrigerator magnetic will put out weak-enough fields that will allow you to align several spins, and it will have an effect on coulombs per second if you move it fast enough. Not to high degree of polarization, but enough to attract the magnet to the refrigerator, so that should answer your question.

[ Parent ]

**Re:DIY?** by Doc Ruby (Score:2) Saturday May 07, @09:13PM

▪ **Re:DIY?** by Quantum Fizz (Score:3) Saturday May 07, @10:16PM

**Re:DIY?** by Anonymous Coward Sunday May 08, @12:48PM

**So, what, Base 4 Computing?** (Score:3, Interesting)

by Ledneh (673693) <ledneh AT radix-lecti DOT net> on Saturday May 07, @08:49PM (#12465073)

(<http://www.radix-lecti.net/>)

I know this isn't exactly what the article said, but I had a thought. If computers could base data on spin and charge at the same time (4 possibilities), would there be any significant advantage to being able to work natively in base 4 instead of base 2?

- **Re:So, what, Base 4 Computing?** by Ledneh (Score:1) Saturday May 07, @08:51PM
  - **Still binary** by PhysSurfer (Score:1) Saturday May 07, @09:17PM
    - **Re:Still binary** by Quantum Fizz (Score:2) Saturday May 07, @10:23PM
      - **Re:Still binary** by PhysSurfer (Score:1) Monday May 09, @02:47AM
- **Re:So, what, Base 4 Computing?** by Anonymous Coward Saturday May 07, @09:03PM
- **Re:So, what, Base 4 Computing?** by Anonymous Coward Saturday May 07, @09:16PM
  - **Re:So, what, Base 4 Computing?** by Anonymous Coward (Score:1) Saturday May 07, @10:23PM
- **Re:So, what, Base 4 Computing?** by Trizor (Score:2) Saturday May 07, @09:57PM
  - **Re:So, what, Base 4 Computing?** by Quantum Fizz (Score:3) Saturday May 07, @10:26PM
- **Re:So, what, Base 4 Computing?** by Anonymous Coward Sunday May 08, @12:21AM
- **Re:So, what, Base 4 Computing?** by Ominus (Score:1) Sunday May 08, @01:58AM

**Spintronics vs. Plasmonics** (Score:1)

by epall (632054) on Saturday May 07, @08:50PM (#12465079)

(<http://svallens.com/epall/>)

How does Spintronics stack up against Plasmonics? I mean, they're both being touted as The Next Big Thing in chips. Are they compatible in any way? Different time frames?

**Mildly disappointing** (Score:1, Troll)

by Rosco P. Coltrane (209368) on Saturday May 07, @08:50PM (#12465082)

I heard of spintronics before. I have some idea of what electron spin is from university, but not much more. So when I saw the article, I thought "wow, great, a nice-looking /. blurb chock full of links to the subject"... only to discover that 4 out of the 5 links link back to /. itself, and the last one links to a half-page semi-general article in physorg.com.

I don't know, I guess I may as well Google spintronics at random...

**Re:Mildly disappointing** (Score:5, Informative)

by Quantum Fizz (860218) on Saturday May 07, @09:19PM (#12465204)

(Last Journal: [Friday March 18, @07:58PM](#))

Spin is usually called "intrinsic angular momentum". Basically it's an angular momentum that's always present in all elementary particles, and is quantized in units of  $\hbar/2$ .

Particles with integer spin, such as phonons (spin 0), photons (spin 1), gravitons (spin 2) are called Bosons and obey Bose-Einstein statistics. Any number of

bosons can be found in any quantum state, and at low temperatures they can condense into the ground state via Bose-Einstein Condensation.

Particles with half-integer spin, such as electrons, protons, neutrons (all spin  $1/2$ ) are called Fermions, and obey Fermi-Dirac statistics. This means interchanging two fermions in a system will cause the wavefunction of the system to acquire a factor of negative one. So if two fermions are in the same quantum state, that component of the wavefunction must be equal to its negative - meaning zero. This is the Pauli Exclusion Principle, meaning no two fermions can ever exist in the same quantum state of a system. This effect has profound impact on physics, accounting for orbital nature of atoms, band structure of semiconductors, etc.

Anyway, back to your question about spin, another aspect of spin is that the allowable spin values must differ by integer units of  $\hbar$ . So electrons, with total spin of  $\hbar/2$  are allowed two states that differ by  $\hbar$  -  $+\hbar/2$  and  $-\hbar/2$ . Usually the direction is chosen by an applied field, or whatever direction is chosen to measure the electron spin.

Spin is tricky because it isn't simply additive, but follows appropriate group theory. Electrons are part of  $SU(2)$  algebra, and spin interactions are weird. For example, you can simultaneously know the total spin (electrons are always  $\hbar/2$ ) and the spin component along one direction (for electrons this could be  $+\hbar/2$  and  $-\hbar/2$ ). But you cannot know the x, y, and z components simultaneously, basically because the Pauli matrices don't commute (Heisenberg uncertainty principle). So in actuality a spin-up electron really points somewhere along a cone that mostly points up, but you don't know more than that.

With two electrons, you can simultaneously know EITHER the total spin of the pair AND the total spin projected along one axis, OR you can know the projections of the two independent spins along one axis. If one electron is up and another is down, the system is in a state of  $1/\sqrt{2}$  (spin-Zero + spin-One). Also - this means that the two-electron system can exist in a Spin-1 state with the spin in one direction zero, or a Spin-0 also with the spin in one direction zero. Since the two electrons would have an integral number of spin, the system acts like a Boson. This is what allows superconductors, which are mentioned in TFA, to pair up and effectively condense.

Additionally, the spin-zero state of two electrons is very important in quantum communication, quantum teleportation, and quantum computation. This is the state with total spin zero, so no matter what direction you measure one spin, the other spin is aligned opposite.

[ Parent ]

[Re:Mildly disappointing](#) by radtea (Score:3) Saturday May 07, @09:45PM

- [Re:Mildly disappointing](#) by karvind (Score:2) Saturday May 07, @11:08PM
- [And room-temperature superconductors too](#) by Anonymous Coward Sunday May 08, @03:08AM

**Ha** (Score: -1, Offtopic)

by Anonymous Coward on Saturday May 07, @08:52PM ([#12465088](#))

What did the proton say to the electron after the electron asked it if it had HIV?

I'm positive

- [Re:Ha](#) by Anonymous Coward Saturday May 07, @10:03PM

**Lots of research** (Score:5, Informative)

by [Quantum Fizz \(860218\)](#) on Saturday May 07, @08:53PM (#12465094)

(Last Journal: [Friday March 18, @07:58PM](#))

Spintronics has been around for several years now, this project mentioned is really just one of many research projects, maybe the researcher Janko has friends with PhysOrg, or PhysOrg just picked him out of a hat.

Spintronics also represents one of the quickest transitions from lab to market, next to the transistor via GMR sensors. The hard disk read heads on the hard drives in your computer, if you bought a new disk in the past few years, already incorporates spintronic effects through GMR (Giant MagnetoResistance). Most major media storage and also electronics companies have been heavily investigating spintronics for years too, not to mention a good percentage of condensed-matter physicists, electrical and materials-science engineers.

Spintronics is also being investigated for quantum computation because the two electron eigenstates in any direction (up / down) can make a good basis for the Zero and One states of a qubit.

But to repeat the hype, spintronics does have potential to revolutionize the electronics industry by offering a whole new degree of freedom to manipulate of the electrons. 'Classical' transistors move/detect/switch charge, adding spin to the picture allows much more flexibility, and probably higher device speeds or data densities. Eg, perhaps microprocessors can go from binary as presence/lack of charge to spintronic up/down charge. Or perhaps even base-4 using presence/absence of both spin up and spin down flavors of electrons.

- [Re:Lots of research](#) by Hao Wu (Score:1) Sunday May 08, @01:09AM

**Nanotechnology + Superconductivity??** (Score:0)

by Anonymous Coward on Saturday May 07, @08:58PM (#12465111)

Wouldn't that be a nano-superconductor?

What would Nano-Superman be like? He's a tiny little bugger, but darn, is he strong!

**IMPORTANT NEWS - Linux is dead!!!** (Score:-1, Troll)

by Anonymous Coward on Saturday May 07, @08:59PM (#12465114)

Yet another sickening blow has struck what's left of the Linux community, as a soon-to-be-released report by the independent Commission for Technology Management (CTM) after a year-long study has concluded: Linux is already dead. Here are some of the commission's findings:

Fact: Linux has balkanized yet again. There are now no less than 120 separate, competing Linux distros, each of which has introduced fundamental incompatibilities with the other distros, and frequently with Unix standards. Average number of developers in each project (except for Redhat and Novell/Suse): fewer than five. Average number of users per project: there are no definitive numbers, but reports show that all projects are on the

decline.

Fact: Trivial issues such as names and a lack of professionalism continue to plague Linux. At a recent Linux conference in San Francisco, a fight broke out between RMS (Richard M. Stallman) who says Linux should be called GNU/Linux and Linus Torvalds who created Linux and says that Linux should be called Linux. This led to a massive barroom style brawl involving at least 150 Linux geeks. The SFPD was called out to break up the melee, and arrested 150 people. It was estimated that at least 2 to 3 times that many were involved in the brawl, but there wasn't enough police on hand to arrest all of them. Thirty one people were hospitalized as a result of this brawl, and one person is still in a coma.

Fact: There are almost no Connectiva developers left, and its use, according to Netcraft, is down to a sadly crippled .005% of internet servers. This led to Mandrakesoft, makers of another troubled distro, to purchase Connectiva. However, industry analysts say that this will not help since Mandrakesoft is already a shell of its former self.

Fact: X.org will not include support for Redhat's Fedora project. The newly formed group believes that Fedora has strayed too far from Unix standards and have become too difficult to support along with other Linux distros and Solaris x86. "It's too much trouble," said one anonymous developer. "If they want to make their own standards, let them doing the porting for us."

Fact: Ubuntu Linux, yet another offshoot of the beleaguered Debian "distro", is already collapsing under the weight of internal power struggles and in-fighting. "They haven't done a single decent release," notes Mark Baron, an industry watcher and columnist. "Their mailing lists read like an online version of a Jerry Springer episode, complete with food fights, swearing, name-calling, and chair-throwing. It also doesn't help that Ubuntu sounds like an obscure term for a gay orgy." Netcraft reports that Ubuntu Linux is run on exactly 0% of internet servers.

Fact: Debian Linux, which claims to focus on "being free" (whatever that is supposed to mean), is slow, and cannot take advantage of multiple CPUs. "That about drove the last nail in the coffin for Linux use here," said Michael Curry, CTO of Amazon.com. "We took our Debian boxes out to the backyard and shot them in the head. We're much happier running FreeBSD."

Fact: The Slackware Distro is now dead. The Slackware team could never get their distro to function on hardware other than Intel and S/390. Had they not been slacking off, Slackware would still be around.

Fact: Servers running SELinux, which claims to focus on security, are frequently compromised. According to Jim Markham, editor of the online security forum SecurityWatch, the few SELinux servers that exist on the internet have become a joke among the hacker community. "They make a game out of it," he says. "The SELinux team will scramble to make a new patch to fix one problem, and they've already compromised a bunch of boxes with a different exploit."

With these incontrovertible facts staring (what's left of) the Linux community in the face, they can only draw one conclusion: Linux is already dead.

**Alien Technology** (Score:-1, Troll)

by Anonymous Coward on Saturday May 07, @09:03PM (#12465133)

This is just the type of technology that we have secretly been investigating from crashed ufo's.

**of thicknesses of order of few dozen nanometers?** (Score:0)

by Anonymous Coward on Saturday May 07, @09:18PM (#12465200)

you must mean 'of a thickness in the order of a few.....'

**I'm with the DJ...** (Score:1)

by [insomniak1 \(265450\)](#) on Saturday May 07, @09:26PM (#12465225)

I carry the cables for his spintronics! Ya gotta believe me!

**Spin Doctor** (Score:0)

by [PrivateDonut \(802017\)](#) on Saturday May 07, @09:28PM (#12465232)

Does that make Boldizar Janko the 'Spin Doctor'?

**boundless optimism** (Score:1)

by [Un pobre guey \(593801\)](#) on Saturday May 07, @09:33PM (#12465248)

ArfArfArf is a nanoscale technology in which information is carried not by the electron's charge, as it is in conventional microchips, but by the BowWowWow and if a reliable way can be found to control and manipulate the BowWow effect, ArfArfArf devices could offer higher data processing speeds, lower electric consumption, and many other advantages over conventional chips--including, perhaps, the ability to carry out radically new quantum computations, cure baldness, relieve users of the heartbreaks of eczema, seborrhea, and psoriasis, feed the hungry, achieve world peace, make everyone wealthy beyond their wildest dreams, and make real their most obsessive erotic fantasies.

- 1) get an MS or PhD studying some exotic physical phenomenon
- 2) publish the results accompanied by wildly optimistic claims
- 3) ?
- 4) Profit!

- [Re:boundless optimism](#) by Quantum Fizz (Score:3) Saturday May 07, @10:28PM
- [Re:boundless optimism](#) by t35t0r (Score:2) Saturday May 07, @11:58PM
  - [Re:boundless optimism](#) by Quantum Fizz (Score:2) Sunday May 08, @12:37AM

**Memory....** (Score:2)

by [shpoffo \(114124\)](#) <nospam AT newalexandria DOT org> on Saturday May 07, @09:37PM (#12465263)

(<http://slashdot.org/>)

Hmmm... I seem to remember this...but I can't find record of it on slashdot. can anyone remember if this has come up somewhere before?

.  
-shpoffo

(Score:1) Saturday May 07, @09:46PM

[Re:Memory....](#) by shpoffo (Score:2) Monday May 09, @12:33PM

**Is it too late?** (Score:3, Insightful)

by [BorgCopyeditor \(590345\)](#) on Saturday May 07, @09:39PM ([#12465269](#))

As someone who reads Greek, I have a special reaction to words made up of in-themselves-meaningless fragments of Greek words: I cringe.

Is it too late to stop the proliferation of "-tron" words? "-tron" means nothing; "electrons" are so called because of the Greek word for amber, which the Greeks knew to be capable of producing a static charge. What if people abstracted part of that word out and started calling every new technology "something-ber"?

I think the technical name for the combining from "-tron" is a "cranberry morpheme," from "\*cran," which apparently has no independent meaning.

- [Re:Is it too late?](#) by Anonymous Coward Saturday May 07, @09:53PM
- [Re:Is it too late?](#) by Anonymous Coward Saturday May 07, @10:06PM

**Re:Is it too late?** (Score:5, Informative)

by [Quantum Fizz \(860218\)](#) on Saturday May 07, @10:33PM ([#12465549](#))

(Last Journal: [Friday March 18, @07:58PM](#))

Too late, quantum physics has long ago settled on the suffix 'on' for representing discrete quanta of various excitations. Eg - photons, phonons, magnons, ripplons, gravitons, inflatons, solitons, instantons, etc. Although that actually has nothing to do with spintronics, but your post made me think of it.

Of course the buzzword 'spintronics' is just 'electronics' with the word spin substituted in. The actual less-trendy synonym for spintronics is *Magnetoelectronics*, which is what it's usually referred to in the "real" science journals, not popular outlets like PhysOrg. magnetoelectronics.

BTW - since you mention Greek I thought a better example would be using the suffix Thon, as from Marathon, to refer to any excessively long activity. Eg Bowl-a-thon, Dance-a-thon, Phone-a-thon, etc.

[ [Parent](#) ]

[Re:Is it too late?](#) by Timberwolf0122 (Score:1) Monday May 09, @08:35AM

- [Re:Is it too late?](#) by Anonymous Coward Saturday May 07, @11:22PM
- [Re:Is it too late?](#) by BorgCopyeditor (Score:2) Saturday May 07, @11:58PM
- [Re:Is it too late?](#) by Anonymous Coward Sunday May 08, @01:16PM
- [Re:Is it too late?](#) by OwlofCreamCheese (Score:1) Sunday May 08, @01:30AM
- [Is there a problem here?](#) by khallow (Score:2) Sunday May 08, @03:23PM

**How long before...** (Score:1, Offtopic)

by [Gilmoure \(18428\)](#) <[gilmoure AT gmail DOT com](mailto:gilmoure AT gmail DOT com)> on Saturday May 07, @10:01PM ([#12465383](#))

(<http://home.eckerd.e...g/comics/comics.html> | Last Journal: [Saturday November 16, @06:41PM](#))

[Scranton is sent skyward?](#) [[technovelgy.com](http://technovelgy.com)]

And what about cities down in Florida, like Lutz or Bithlo? Is there anyone down here who'd mind them being sent out into space?

**OMGZ0RZ GOOGLE HAKT** (Score:0)

by Anonymous Coward on Saturday May 07, @11:28PM (#12465741)

THAT IS WUT I SED:

<http://www.myplanet.net/gthing/Picture%202.png> [myplanet.net]

**photonics or spintronics?** (Score:2)

by [t35t0r \(751958\)](#) on Saturday May 07, @11:53PM (#12465828)

In the next 50 years or so do you think that photonics or spintronics will become the main technology behind computation, or will we see a hybrid computer that uses the best of both technologies (e.g. computation/cpu using spintronics and data transport in buses between devices/peripherals using photonics)?

- [Re:photonics or spintronics?](#) by [quanta626](#) (Score:1) Sunday May 08, @01:23AM

**Actually...** (Score:2, Funny)

by [Eradicator2k3 \(670371\)](#) on Sunday May 08, @12:27AM (#12465962)

...Nanotechnology + Superconductivity = Supertechnonanocondoexpialidocious

**a quantum computer?** (Score:2, Funny)

by [admactanium \(670209\)](#) on Sunday May 08, @01:40AM (#12466250)

(<http://jeffnee.com/>)

it has already imagined a beowolf cluster of itself!

**You 7ail it...** (Score:-1, Troll)

by Anonymous Coward on Sunday May 08, @01:56AM (#12466305)

Of \*BSD 4sswipes [goat.cx]

**Off topic, but odd.** (Score:1)

by [ThePromenader \(878501\)](#) on Sunday May 08, @02:15AM (#12466369)

(<http://www.paris-promenades.com/> | Last Journal: [Friday May 13, @07:55AM](#))

Have a look at some of the google ads that appear around the article : ) "Life-prolonging magnets" "Immortality device".... : )

- [Re:Off topic, but odd.](#) by Anonymous Coward Sunday May 08, @08:54AM

**The opposite of old news...** (Score:0)

by Anonymous Coward on Sunday May 08, @05:42AM (#12466812)

*"if a reliable way can be found to control and manipulate the spins spintronic devices could offer higher data processing speeds"*

Heh, heh... Only if! Slashdot: Speculation for nerds. Stuff that's not news yet. And this coming on the tails of "Firefox 1.1 - Nope, not yet." What happened? Everything used to be so old around here.

**Boldizar Janko** (Score:0)

by Anonymous Coward on Sunday May 08, @11:44AM (#12468305)

Boldizar Janko would be a great name for a rock and roll band.

**Its Old News** (Score:1)

by SyntaxJack (882039) on Sunday May 08, @05:08PM (#12470610)

Spin Wave technology is nothing new, for that matter it's just it's nature, and then we "discover" it as something new. Check out:

[http://www.hightechscience.org/spin\\_wave\\_technology.htm](http://www.hightechscience.org/spin_wave_technology.htm) [hightechscience.org]

- [Re:Its Old News](#) by SyntaxJack (Score:1) Sunday May 08, @05:23PM

**Spintronics Holds A lot of Promise for Future** (Score:1)

by fedrive (625338) on Monday May 09, @12:40PM (#12478456)

For those interested in Spintronics and Quantum Entanglement visit this website.

<http://colossalstorage.net/> [colossalstorage.net]

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*Sometimes even to live is an act of courage. -- Seneca*

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