

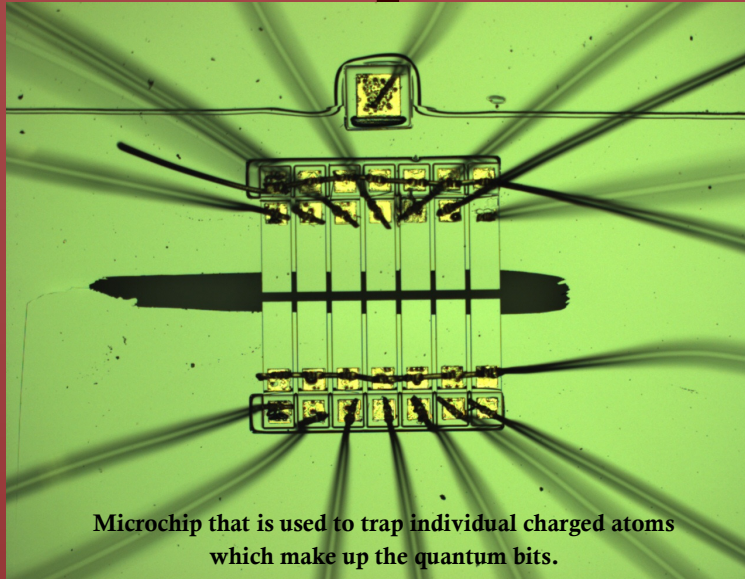
Behind Closed Doors cont.

Cont. From Page 1... of a quantum computer scales exponentially faster than that of a classical computer. "

We spend the next few minutes talking about what this will mean to you and me in terms of how computers will affect our lives in the future and Winni raises an important historical point, "back in the forties it was widely believed that 'the worldwide market for computers will be no more than 10' so what effect quantum computers will have is, ...who knows?" In an obvious way quantum computing appears to be able to remove the limits on current research projects, ranging from simulations of large scale cosmic structure to a better understanding of chemical reactions. The problem for such simulations is that the more detail you put in the more accurate the results but the time taken will be longer. Winni is making it clear that as well as removing these limits quantum computing will also have the power to change the world around us in ways we can't imagine!

Before getting too carried away with the possibilities I wanted to know why don't I have a quantum computer on my desk right now? After all people have been working on these for 20 years or more, since Richard Feynman first worked on the theoretical side, how sure can we be that a quantum computer will ever grace our desktops? Once more Winni's infectious confidence comes through, "Oh for sure, in ten years they will be available for universities. Fully functioning quantum computers with up to 10 quantum bits are already reality now." I ask Winni to

repeat that last point just to be sure and ask for any limiting factors, "it just needs to be made bigger, but it works as it is meant to." Could funding be a problem? "Sufficient funding is highly important, especially if we want to build one of these machines soon. Only recently I have been awarded of 1.4 million for this research, so we are in a pretty good position here at Sussex."



Microchip that is used to trap individual charged atoms which make up the quantum bits.

Moving away from the practical I ask how seriously Winni takes the philosophical implications, you know is the cat dead or alive and all that? "It's pretty cool to be able to develop new technology and think about the very nature of things at the same time." With that comment Winni pulls one of his 'big grin' faces and I get the feeling you wouldn't actually need to pay this man to come to work. "We were watching this atom some time ago and it

went forwards and backwards at the same time!", What literally? I ask, "absolutely, that's pretty cool eh?" Yeah, pretty cool sums it up.

If this has whetted your appetite and you want to read more about Winni's work then check out his web page which is full of details of just what it is Winni and his colleagues are up to:

<http://www.sussex.ac.uk/physics/iqt/index.html>

Nic Clarke



Lasers & Optics required to cool single charged atoms close to absolute zero. (~-273°C)

Contact Details:

If you would like to suggest an event to Q-soc or send any type of pictures/writings then please send to sn73@sussex.ac.uk and it'll be in the next mag! -if its good enough :D