



Q-SPACE

A QUANTUM CONCEPT TO POWER HUMANITY

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ABSTRACT

With the end of cheap oil rumored to be quickly approaching (if not already upon us), not to mention the consequences of fossil fuels upon the environment, alternative sources of clean, cheap and renewable energy is a mandatory wave for future.

But the key factor in energy ventures is efficiency. So how to get the most favorable cost-to-benefit ratio in the harnessing, creation and distribution of energy?

Oil and coal must be extracted, shipped, refined and burnt, contributing greenhouse gases to the atmosphere. Wind needs to be present to be converted by turbines. Water requires the construction of dams, which are not only expensive but also radically destructive to the ecosystem they are built upon.

Among all the renewable resources, solar energy is by far the largest available resource, providing to Earth more energy in 1 hour than all the energy consumed by humans in an entire year. As you can see, we are not living an energy crisis; this is a creativity crisis instead!

But it turns out that ground-based solar systems are subject to weather and the Earth's day and night schedule. This is where space-based systems come into play. In space, the sun shines 24 hours a day, 7 days a week, in huge quantities. It works regardless of cloud cover, daylight, or wind speed.

Essentially, space based solar power systems consist in large sets of photovoltaic cells that convert solar energy in space and beam it down to ground-based stations through microwave.

The problem is that, putting a power plant into orbit is extremely expensive. Space Shuttle program, averaged over all missions was estimated to come out to US\$1.5 billion per launch. Approximately US\$ 60,000/Kg of payload. *(Source: The Rise and Fall of the Space Shuttle)*

SBSP systems were first proposed back in the 1960's and ever since it has never been presented to be economically viable. NASA fresh look report says that a 250MW power plant would cost US\$ 10 billion and would take 20 years to be implemented. The global energy demands is set to double from 16.5 TW to 30 TW by 2030. *(Source: World Bank)*

This is really far to be a competitive technology with the current energy sources.

Now, what if we could cut off the launch costs by setting up a ground-based power plant and make it work as if it was virtually in space? What if we could also decentralize power generation and therefore cut off the high costs of distribution infrastructure?

In other words, what if we could teleport solar energy from space to any device anywhere in universe?

The key to make this miracle come true might be in the microscopic world, in a singularity called quantum entanglement.

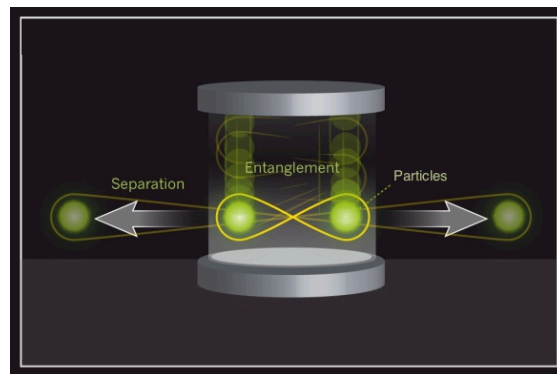
WHAT IS THAT?

In quantum physics, when two subatomic particles interact, they can become entangled. That means their spin, position and other properties become linked through a process still unknown by modern science. As a result, measuring one of the particles instantaneously determines the behavior of the other.

In other words, actions performed in particle A will immediately affect particle B, and particle B can be billions of light years away. The phenomenon so riled Albert Einstein he called it “spooky action at a distance”.

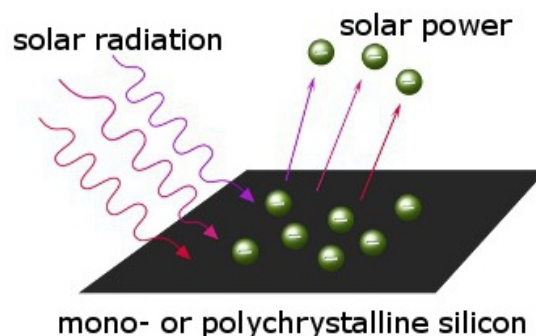
Quantum computing and quantum telecommunications have been the holy grail scientists have been trying to harness with this phenomenon. Just to give you an idea, a quantum computer can make IBM Watson look like a toaster.

It is true that quantum entanglement presents severe technological challenges, however, if scientists overcome some fundamental obstacles and they have been, this technology will change everything.



HOW DO SOLAR CELLS WORK

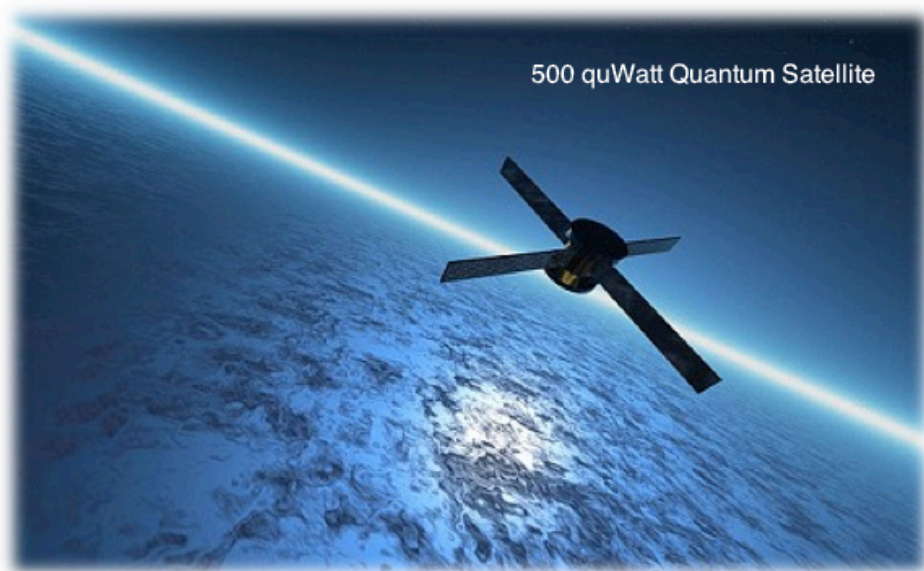
Some materials such as silicon presents a property known as the photoelectric effect that causes them to absorb photons of light and release electrons. Essentially when the sunlight strikes its surface, a percentage of the solar energy gets absorbed. This energy now inside the semiconductor knocks electrons loose allowing them to flow freely. This is a direct conversion of light into electricity at the atomic level.



THE Q-SPACE PROJECT

Now, consider the particles of two silicon molecules entangled, Si-a and Si-b. What would happen to Si-b, if Si-a were exposed to sunlight? The idea is to excite Si-b through the entanglement with Si-a. In theory we are teleporting the photovoltaic effect. This is what the Q-SPACE project is all about. And it gets better. Scientists have been able to entangle other particles from the original pair without destroying the entanglement. This allows us to scale this thing in a very spooky way.

Think of Si-a as one and small solar power satellite primarily entangled with Si-b before sent to space. On Earth (or Mars), Si-b would serve as our entanglement matrix mold. This matrix is nothing but a solar-cell like structure through where we will entangle our “quantum batteries” with the satellite, which is already in space. A “QuBattery” is nothing but a completely off-grid never-ending power source unit that could power our homes, our never-charge cell phones and run electric cars forever. Space exploration for instance, would be taken to another level, just to mention a few implications.



“Any sufficiently advanced technology is indistinguishable from magic.” Arthur C. Clarke

Endeavor