

Staggering atoms sober up in physics detox cell

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Using an entirely new technology, a research team from Umeå University in Sweden has succeeded in controlling and converting energy from the random movement of atoms. “You could say that we have found a detox cell where drunken atoms can sober up,” says physicist Peder Sjölund. The findings are being published in the journal *Physical Review Letters*.

We are surrounded by random, staggering, movements. We don't notice it, but particles collide with each other in an uncontrolled manner in the air we breathe and in the milk we drink, for instance. This is called Brownian movement. This random movement also functions as an energy reservoir. This is something that is utilized by various systems, such as when proteins are transported in the body, so-called Brownian motors.

The Umeå scientists have developed an advanced laser technique for studying and controlling these movements. The staggering movements of atoms in a field of light can be captured in a type of detox cell made up of laser beams, where they can sober up. The staggering movement is converted there to movement in a specific direction.

“We can control this movement in three dimensions in regard to both velocity and direction,” says Peder Sjölund.

This technology will be able to provide new knowledge about how energy in living cells is converted from chemical energy to movement in

molecular motors that are transported in cells. The underlying principle is very general and can also be applied in nanotechnology and for transporting information in super-rapid calculations in quantum computers, for example.

It may be utopian to be able to offer people access to free and inexhaustible energy by converting energy with this technology, and this will certainly not become a reality in our lifetime. Nevertheless, the Umeå scientists have shown that it is possible, though only in tiny systems.

Source: The Swedish Research Council

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