

A Computer Able to Outlive the Universe?

Written by Marco Attard
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A computer able work even after the heat-death of the universe, using a "time crystal" to continue operating as the universe cools down and dies. Science fiction? Science fact, according to New Scientist...



Theoretical physicist Frank Wilczek was the first to suggest the idea of time crystals-- structures following that of ordinary crystals (where atoms are arranged in regular repeating patterns) in the 4th dimension, time.

Crystals adopt such a structure because it uses the least amount of energy possible to maintain... meaning the atoms inside a time crystal will continue rotating (in order to "translate the symmetry of regular crystals" in time) even after the universe succumbs to entropy.

In theory, anyway.

What do you need to make a time crystal? Wilczek suggests using a theoretical "superconductive ring," using electrons to form a repeating pattern. Another team of scientists has a more workable "blueprint." An ion trap forms a ring-shaped "crystal" out of single ions (using an electric field) before applying a weak magnetic field, causing the ions to rotate.

Quantum theory suggest such a device will create a time crystal-- or rather a space-time crystal, since the ion ring repeats in both space and time.

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Making a time crystal does have a catch-- it needs temperature close to absolute zero. Not to mention a laboratory (and a crew manning it) able to survive the heat-death of the universe. Not one for our lifetimes, then...

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