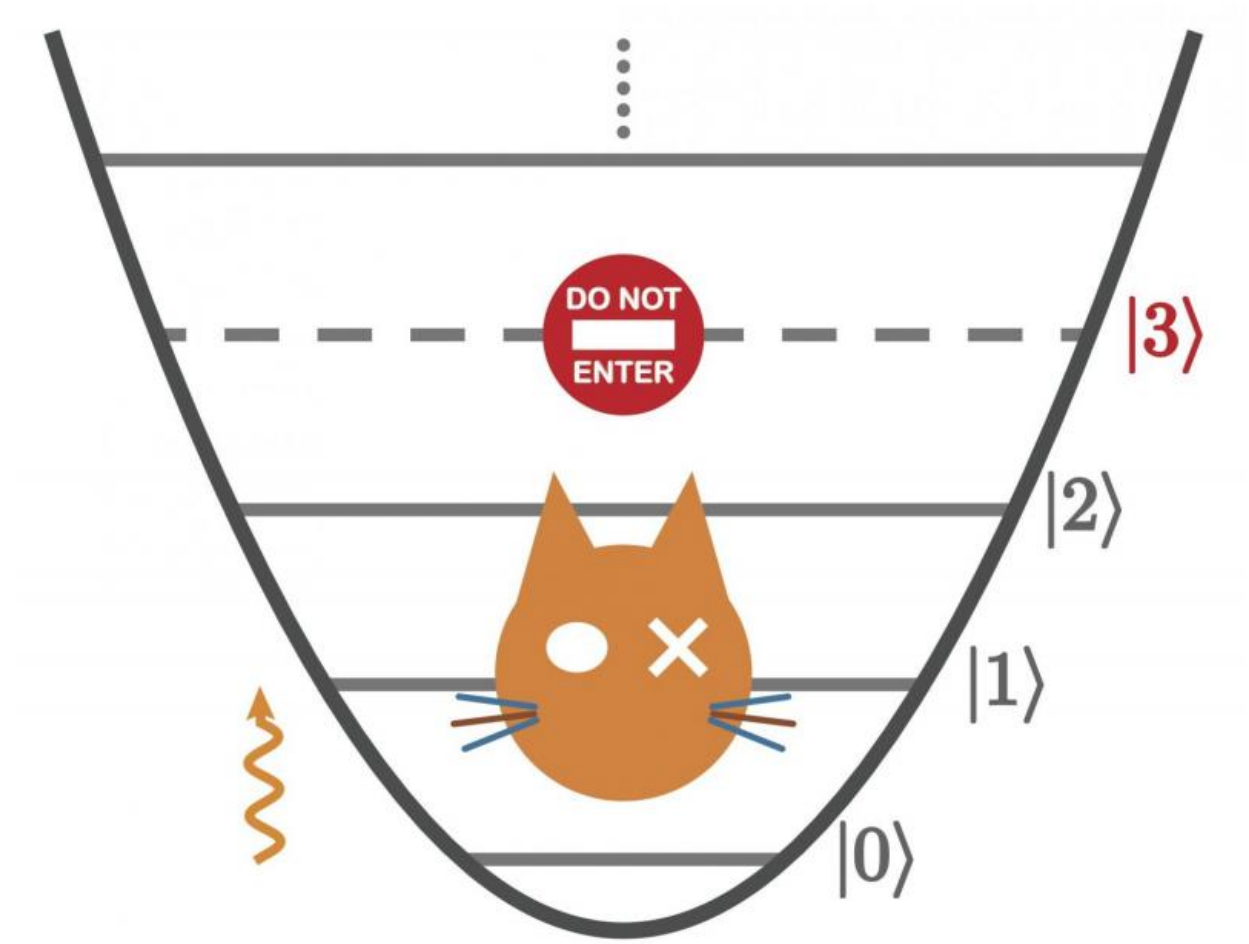
Best of Last Week – New definition of time crystals, new images of Pluto and the mechanism that causes neuropathic pain

July 13 2015, by Bob Yirka



Zeno cat. A Zeno cat refers to non-classical states of light created by shining a cavity on resonance while it is forbidden to access a given energy level. The name originates from the Zeno effect, which can similarly prevent an energy level from being occupied by the sole fact of measuring its occupation

frequently. The cat comes from the similarity of such a state with a Schrödinger cat state of light: a superposition between two classical states of light. The Zeno cat figure corresponds to the study's experimental design. Credit: Benjamin Huard.

(Phys.org)—It was an interesting week for physics as a team of researchers with the University of California and the University of Tokyo proposed a new definition of time crystals—then proved such things don't exist—theory had suggested a system that could move despite not having enough energy to do so. Also, a team at Ecole Normale Supérieure in France demonstrated a way to control the quantum properties of light by using microwave photons to probe a superconducting circuit. And researchers working for the Department of Energy used neutrons to find the "missing" magnetism of plutonium —confirming a long held theory.

It was also an interesting week for space exploration, mostly notably regarding reports describing findings by NASA's New Horizon spacecraft as it approaches Pluto—first, as the craft moved closer, new geological features began to appear. Then, after getting even closer to the dwarf planet, researchers noted a heart-shaped feature on the surface —though they still do not know what it is. Such news highlights a problem developing within NASA and other space research groups: How will we know when we have found extraterrestrial life? Phys.org spoke to Terence Kee, President of the Astrobiology Society of Britain to gain some insight. In related news, a new Boeing patent put focus on laser-powered propulsion systems for airplanes, and potentially for spacecraft as well. The idea appears to involve firing a laser at a piece of radioactive material, setting off a small fusion reaction. Boeing has not commented publicly on the patent or idea.

In other news, a team of researchers at Pennsylvania State University College of Medicine wondered: Can four fish oil pills a day keep the doctor away? They believe the answer is yes, at least for older people who take the pills for at least three months. Also, somewhat ominously, researchers with NASA's Jet Propulsion Laboratory working on a new study found that heat is being stored beneath the ocean surface. That helps to explain where all the excess heat due to greenhouse gases has been going, but it also poses the question of what happens when the saturation point is reached.

And finally, if you are one of the millions of people who suffer with some type of chronic pain, good news may be coming soon as a team of researchers at the University of California has found the key mechanism that causes neuropathic pain—they believe the discovery will open the door to new treatments that will finally alleviate suffering from such ailments as trauma, diabetes, MS, shingles and a host of other conditions.

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