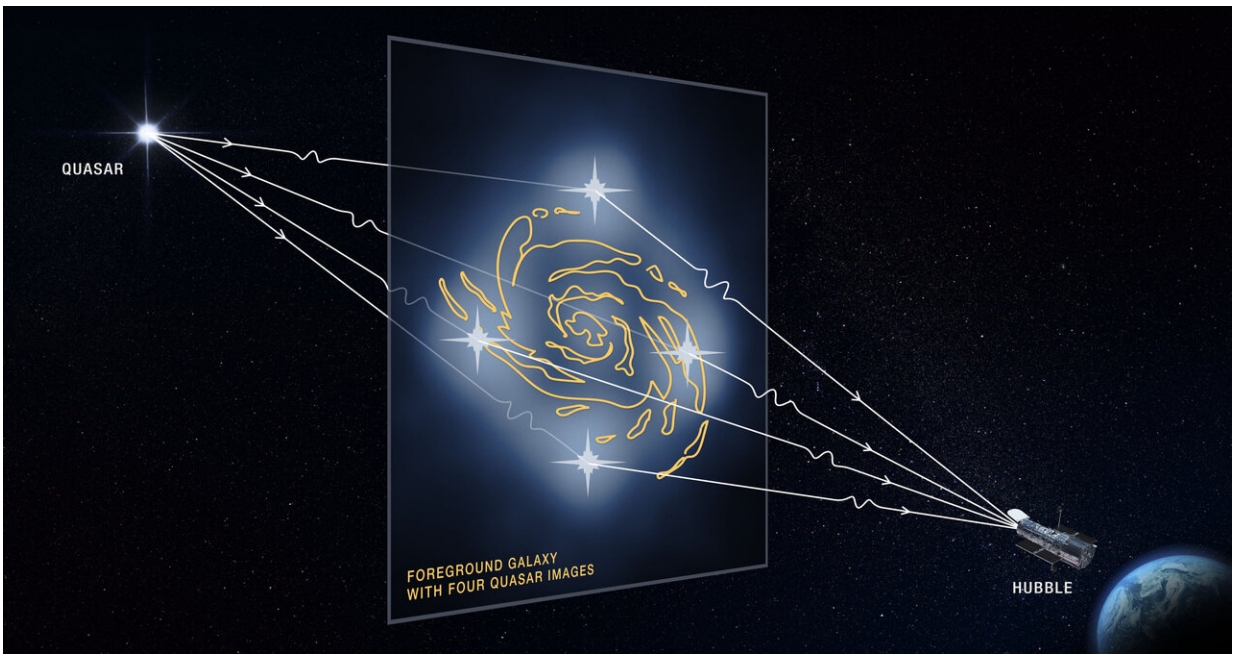
Best of Last Week – Smallest known dark matter clumps, gold made of plastic, a beverage to control blood sugar levels

January 13 2020, by Bob Yirka



This graphic illustrates how a faraway quasar's light is altered by a massive foreground galaxy and by tiny dark matter clumps along the light path. The galaxy's powerful gravity warps and magnifies the quasar's light, producing four distorted images of the quasar. The dark matter clumps reside along the Hubble Space Telescope's line of sight to the quasar, as well as within and around the foreground galaxy. The presence of the dark matter clumps alters the apparent brightness and position of each distorted quasar image by warping and slightly bending the light as it travels from the distant quasar to Earth, as represented by the wiggly lines in the graphic. Astronomers compared these measurements with predictions of how the quasar images would look without the influence of the

dark matter clumps. The researchers used these measurements to calculate the masses of the tiny dark matter concentrations. Dark matter is an invisible substance that makes up the bulk of the universe's mass and creates the scaffolding upon which galaxies are built. Quadruple images of a quasar is rare because the background quasar and foreground galaxy require an almost perfect alignment. Credit: NASA, ESA, and D. Player (STScI)

It was another good week for physics as a team with members from Yonsei University, Lyon University and KASI found new evidence that showed that a key assumption made in the discovery of dark energy is in error—they found a significant correlation between SN luminosity and stellar population age at a 99.5 percent confidence level. Also, a team with members affiliated with several institutions in the U.S. reported that Hubble data revealed the smallest known dark matter clumps to date—by measuring how the light from faraway quasars is affected as it travels through space.

In technology news, several media outlets reported that Intel and Lenovo demonstrated devices with foldable screens that could move such devices from novelty status to the mainstream. And a team of engineers at the University of Missouri designed an on-skin electronic device that provides a personal air conditioner without electricity—using passive cooling. Also, a team at Technion and TowerJazz built a two-terminal floating-gate transistor for neuromorphic computing—and they did it using standard single-poly technology and a commercial 180-nm CMOS process. A team at the University of Sydney announced that they were preparing for the hydrogen economy—after determining how hydrogen leads to embrittlement of steels.

In other news, a team of biologists from the MDI Biological Laboratory and the Buck Institute for Research on Aging identified pathways that

extend lifespan by 500 percent in nematodes. And a team at ETH Zurich made headlines by creating an 18-carat gold nugget made of plastic—it weighed five to 10 times less than traditional gold. Also making news was work by a team at Stanford University—they reported evidence showing that the human body temperature has decreased in the U.S. since the 19th century.

Finally, if you are among the millions of people around the world worried about developingdiabetes, help might be on the way. A team of researchers at the University of British Columbia reported that a new food supplement called ketone monoester could help control blood sugar levels..

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