



How single particles of light can protect power grids

March 24, 2021

[How single particles of light can protect power grids](#)

As the world becomes more dependent on computers to simplify tasks in our daily lives, the nation's energy grid is no exception. Computers have made renewable energy possible, and they constantly monitor our power consumption and redirect energy, allowing us to decrease our collective carbon footprint.

As we know, with technology comes great advances. But it can also open pathways into these energy systems for those who want to cause harm. Bad actors are constantly searching for ways to circumvent the safeguards designed to protect our computer-dependent world. Whether that's stealing credit card information, or an adversary secretly entering the nation's power grids, designing methods to stop these people is a national security concern.

This is why sensitive information sent through computers is encrypted. And when it comes to something as vital as the electrical grid, scientists in the field of cryptography develop highly complex, mathematically based security codes to protect this information.

These computer codes are virtually uncrackable, and it's a credit to cryptographers that the nation's grid has remained so secure. But as computing power steadily increases, cryptographers and the people hoping to infiltrate these systems are in a constant race that has become increasingly harder for those protecting the grid to win.

Rather than running this race by developing more and more complex codes, for the past eight years Los Alamos National Laboratory has developed a new method for protecting information sent through the nation's grid system called Quantum Ensured Defense (QED). Instead of math, this method is based on immutable laws of physics and uses single particles of light, or photons, to protect information.

Read the rest of the story as it appeared in the [Santa Fe Reporter](#).

Unable to load contents of IFRAME at this location in the original document. See original HTML document and notify an administrator.