


Search for cheap flights and book the best offers: Latest Flight

One component of cannabis, cannabidiol, would be able to

"Child obesity in Italy has worsened, today one child in three

Indonesia has  declared a state of emergency for the eastern and  
Sponsorizzato da

## Physics: demonstrated the phenomenon of quantum entanglement thanks to two quasars

Demonstrated one of the fundamental phenomena of quantum physics thanks to the light collected from two quasars to billions of light years from us

By **Filomena Fotia** 22 August 2018 - 07:30



**Einstein** has defined him as the responsible for a '**distant spectral action**', and still today is one of the most mysterious phenomena of modern physics: it is the **quantum entanglement**, according to which the quantum state of a physical system can not be described individually, but only as a **superposition of multiple systems**. Two particles in quantum entanglement - [explains Global Science](#) - are therefore intrinsically connected to each other, even from a distance - hence the *spooky action*, 'einsteinian spectral action' - and with each alteration of the state of a particle, a change immediately changes in the state of the other. This phenomenon, initially inconceivable in classical physics, implies that there is no way to attribute **properties to individual particles**: if, for example, two electrons are in an *entangled state* (literally, 'intertwined'), their individual spin orientations are 'mixed', and therefore indiscernible.

Now a study coordinated by the **Austrian Academy of Sciences** and the **University of Vienna** has found a new proof of this cornerstone of quantum physics, exploiting a help that even comes from space: the article, [published in \*Physical Review Letter\*](#), shows in fact the 'quantum entanglement starting from the behavior of two **quasars**, extremely bright active galactic nuclei respectively at **7.8** and **12.2 billion light years** from us. Scientists have developed an experiment using the **National Galileo Telescope of IAF** and the **Herschel Telescope** of ESA.

Next to each telescope a receiving station was built, to which the researchers sent **pairs of entangled photons**. At the same time the two telescopes, focused on two different regions of the sky, collected the **light of the two distant quasars**: these light sources were then exploited to establish the type of measurements to be performed on the initial *entangled* photon pairs. In other words, the two quasars functioned as a sort of **cosmic measuring system**, to 'decide'

which measurements to perform here on Earth. The reason for this complex quasar-photon architecture? The entanglement, in fact. In fact, the measurement of a photon of an *entangled* pair has an immediate result on the measurement of the other photon; but because the phenomenon of quantum entanglement is truly demonstrated, it is necessary that the **choices** on the type of measurement to be performed are completely **independent**. And this is where the quasars come into play: by entrusting the 'decision' on the measurements of the photons to distant light sources, the scientists have obtained the **guarantee of independence** of the measurement itself. Thus demonstrating the quantum entanglement starting from a phenomenon - the light of quasars - dating back to **billions of years ago**: to put it like Einstein, a real 'distant spectral action' in space and time.

## Contenuti Sponsorizzati

---



One component of cannabis, cannabidiol, would be able to multiply by 3 the ...

[Tumors: cannabis ...](#)

"Child obesity in Italy has worsened, today one child in three is obese. This opens the ...

[Health, Minister ...](#)

Indonesia has declared a state of emergency for the eastern and northern regions ...

[Earthquake Indonesia: ...](#)

This site allows you to find the cheapest flight: tickets from € 19.95

[Cheap Flights to -70%](#)

Arrived in Italy the indestructible smartwatch that revolutionized the American market

[Tactical life](#)

The cruise on the Volga is the classic river cruise from Moscow to St. Petersburg.

[Russian Tour](#)

Sponsorizzato da