



SPACE QUANTUM TECHNOLOGIES FOR CHILDREN

Easy & Attractive Edu

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Internet BUT QUANTUM! BUT easily explained!

Schrödinger's cat is undoubtedly the favorite hero of every child who has that is the basis of all quantum heard about quantum. This attractive pet is the embodiment of the superposition technology nowadays. Quantum computers and their networks develop progressively. The greatest goal of humanity is called the "quantum internet." Its realization can provide unprecedented security and significant progress in distributed quantum computing and boost teleportation's range drastically. [1]

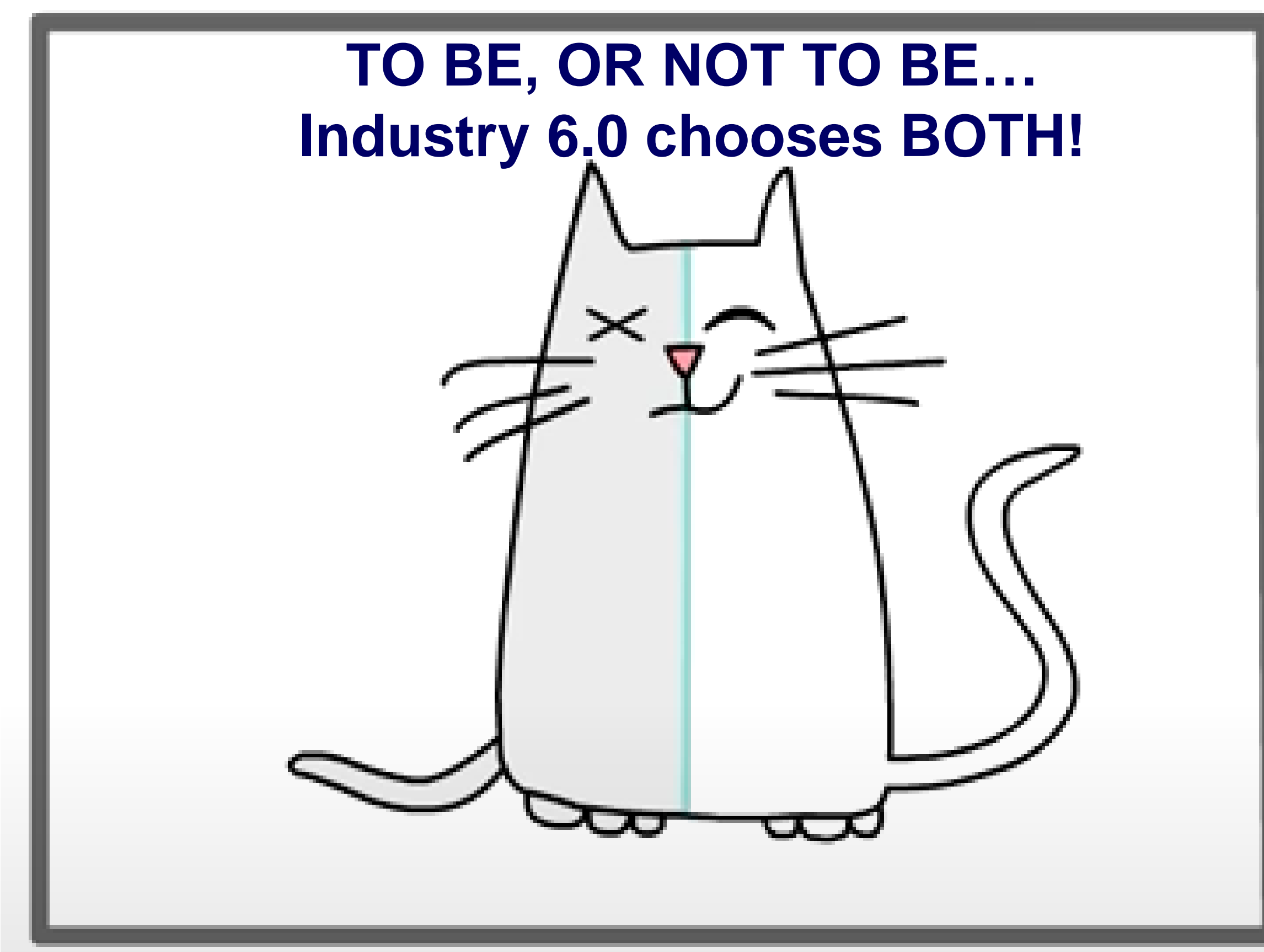


Figure 1. Schrödinger's cat: A thought experiment in quantum mechanics - Chad Orzel (Source: TED-Ed)

Teleportation and Space – Time Travel

There is no student without questions about wormholes, teleportation and space-time travel. The answers can be easy: a wormhole connects two distinct places, teleportation is information distribution without physical movement, and space-time travel is possible using both combined. The wormhole can stay open long enough to get the necessary information. [2]

Quantum Cryptography Explained with Chocolate

However, quantum cryptography does not appear to be a simple science; it turns out to be as easy to accept as chocolates. Turning to Karl Svozil's experiment (Bob and Alice see the numbers on the chocolate balls with the opposite color of their glasses - green or red. When they carry glasses with the same color, they can identify the same 0s and 1s series. The result is the creation of a secured cryptographic key.) in a workshop or a part of a "Quantum science and technology" interactive course for children, the results are more than satisfactory. 9 out of 10 children indicated that they understood the basic concepts of quantum mechanisms at the end of the course, realized by STEALM Academy (Sofia, Bulgaria), and they would recommend it to their friends. [3]

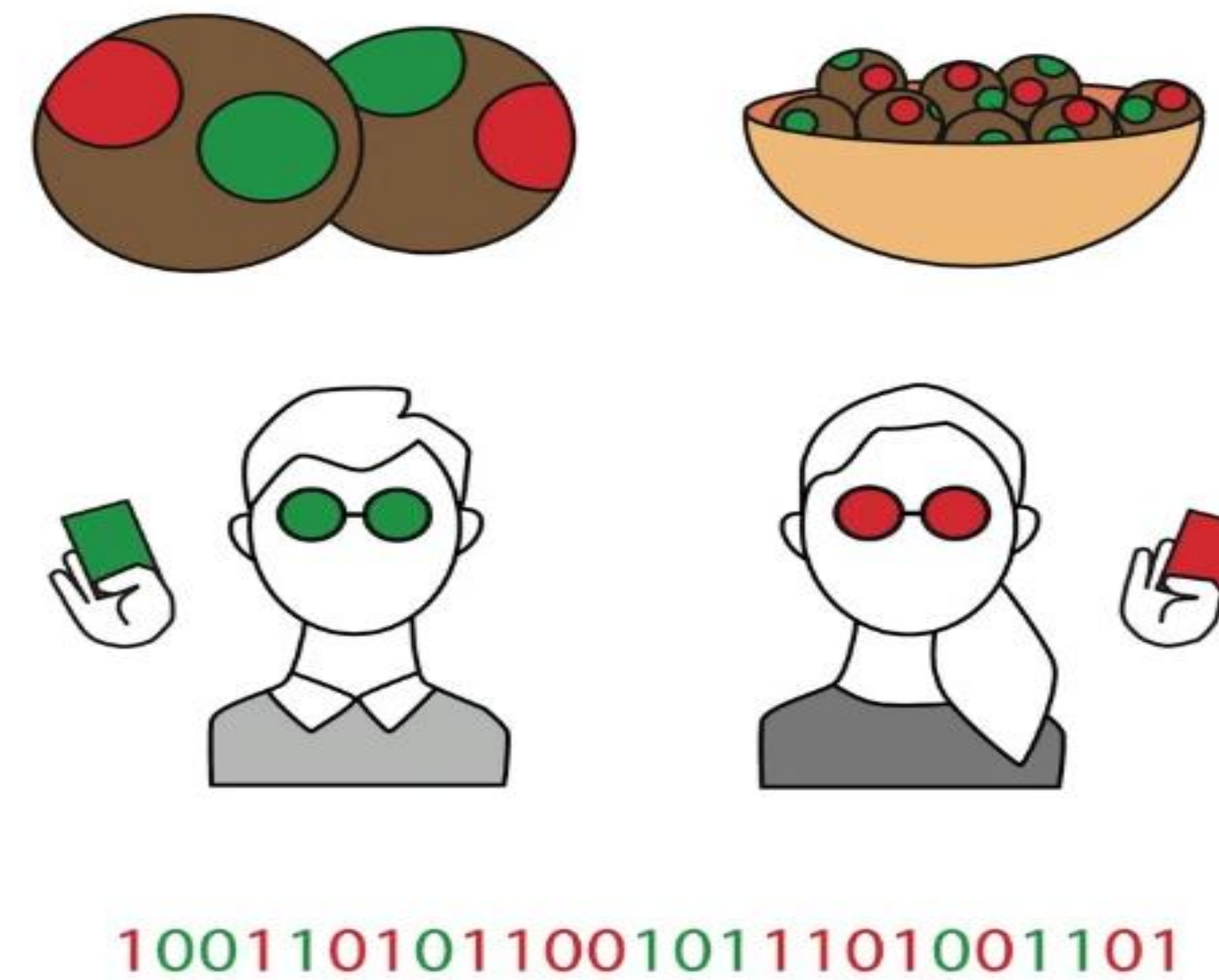


Figure 2. Svozil's chocolate ball experiment (Source: Science Focus, BBC)

Quantum Communication in Space

People expect a lot of space missions impatiently to be realized in the next few years: space tourism for everyone, missions to the Moon and Mars and even colonization. Numerous innovative space telescopes, satellites, and even a few space habitats are anticipated to be sent into orbit in the upcoming years. [4] Thus, the need to send information into deep space is constantly increasing. Then, researchers found that X-rays make the finest quantum communication channels for sending signals among stars. [5]

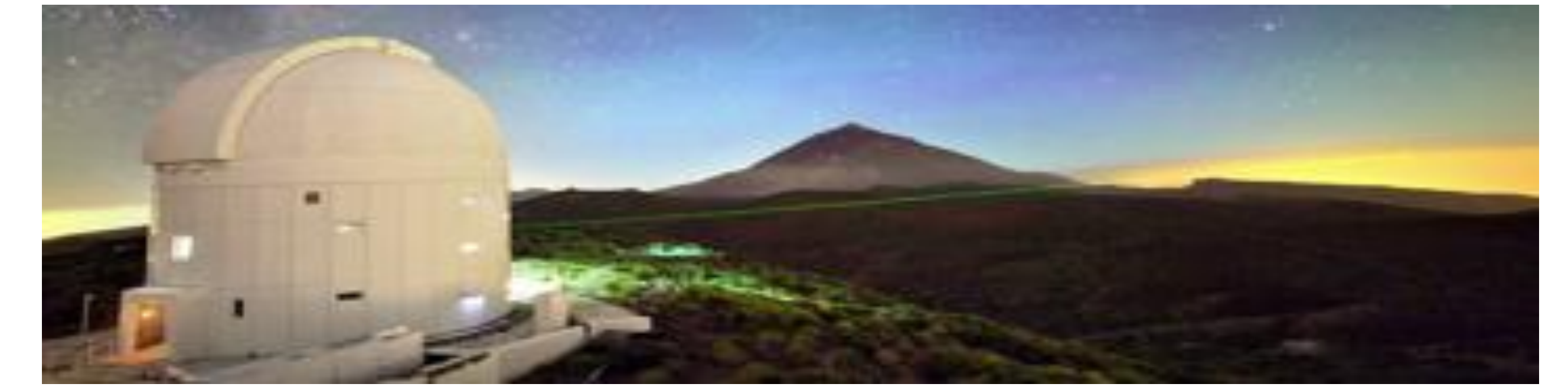


Figure 3. Laser communications set for Moon mission (Source: ESA)

Hello, Aliens! We are Here!

Quantum SETI (Search for ExtraTerrestrial Intelligence) is the newest idea for interstellar communication. According to scientists, the future search for aliens should use quantum communication methods. When it comes to information efficiency and security, they are preferred to traditional communications. [6]

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