The press service of the University of ITMO reported that university scientists, together with colleagues from other scientific centers, created a method for increasing the capacity of space communications. The development is based on the use of “twisted” laser beams, each of which acts as an independent channel of information transmission.

The technology uses the phenomenon of the orbital angular moment of light, allowing you to create multiple channels in one ray. This is similar to the use of different frequencies in radio communications, but with a much greater data density. To generate such bundles, a non-linear crystal of the beta barium is used, converting the original laser signal into a stable “comb” of vortex states.

The key advantage of the method is resistance to external interference, such as clouds or cosmic dust. This solves one of the main problems of free-spatial optical connection, whose stability previously greatly depended on environmental conditions. The data transfer rate may exceed the current indicators in 20 Gb/s.

Development simplifies the creation of high -speed channels between satellites and ground stations. The method does not require complex equipment and can be deployed anywhere. This is especially important for the development of satellite groups and space missions.

The study was attended by scientists from the Institute of General and Inorganic Chemistry of the Russian Academy of Sciences and NIU MIET.