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IMPLEMENTATION OF FRACTAL ANTENNA IN NANOSATELLITES FOR PROVIDING
INTERNET SERVICES TO RURAL SCHOOLS IN MEXICO**Abstract**

Unfortunately, the development of satellite technologies in Mexico has been lagging behind in recent years; To the east being a developing country we opted to invest in technologies from more developed countries, thus reducing government support for research, design and manufacturing in the aerospace and telecommunications sector. With the objective of supporting the scientific-technological development in Mexico, the creation of a **low-cost nanosatellite** that will provide Wi-Fi coverage in schools in rural areas of the country is sought.

The *CubeSats* have made possible the creation of a branch of nanosatellites very useful to develop space missions at reduced costs due to its dimensions of 10x10x11.35 cm and a mass of 1.33 kg. This makes the *CubeSats* missions develop faster than conventional satellite missions. With the mission of further improving the capabilities of *CubeSat*, the use of a fractal type "carpet" antenna was implemented to provide Wi-Fi coverage in schools in rural areas.

The implementation of a fractal antenna showed that these are capable of compensating bandwidth management of up to 50%, compared with dipoles and monopoles, on the other hand, it offers the advantage of being multiband and replicable; making it ideal for satellite communications and having fewer problems for placement into the orbit.

Being these processes of low cost, self-sustainable and of fast development; "CubeSats" equipped with fractal antennas capable of providing Wi-Fi services will be able to solve in the future the problems and deficiencies suffered by thousands of rural schools in Mexico. It is unfortunate that in the XXI century, there are *Scientific-Technological schools* in Mexico without access to Internet services.