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ESTABLISHMENT OF VLBI FOR THE MEXICAN ASTRONOMICAL GEODESICAL NETWORK (RAGN)

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The RAGN serves as a unique analytical reference framework that coordinates all the scientific and technical measurements of the Mexican country. It determines its dimensions and combined with other countries networks provides the basis to define the reference ellipsoid parameters as well as to study the Earth as a planet. The RAGN helps in the control of artificial satellites (SAT); furthermore, it provides the basis to study the deformation of the Earth's crust in the country.

The RAGN in México was developed in roughly three periods. In the first, from 1915 to 1965, it was dependent on optomechanical methods of triangulation and polygonation. In the second, at the end of the 1970's, the RAGN was adjusted to the "Transit Satellite System". In the third epoch which started at the beginning of the 1990's, with the help of the "Navigation Global Positional System" (NAVSTAR), the current "National Satellital Geodesic Network" (RGNS) was implemented.

The Mexican territory sits on a very active seismic zone in which several tragical earthquakes have occurred in the last 80 years. After an earthquake technoscientific studies have to be made to determine the deformation of the vertices of the RGNS. This work proposes a way to quickly determine the changes of coordinates of the vertices via an intercalated VLBI to the RGNS. One of the radiotelescopes could be the Large Millimeter Telescope Alfonso Serrano (LMT), located in Sierra La Negra, Puebla, while the second could be located in Mexicali, Baja California, on a point of the RGNS. The method to be used compares the two RGNS coordinates referenced to the VLBI in a time when the Earth's surface is stable in México. After an earthquake the adjustment of the coordinates is calculated. The observational methodology for the VLBI and the RGNS, how they are linked as well as the least squares method to adjust over the reference ellipsoid are presented.