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# RESUMOS DOS TRABALHOS

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# INVESTIGATION OF LOCATION TECHNIQUES USING SATELLITES

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Preliminarily, the present work the use of the ARGOS system, along with algorithms to process the Doppler shift measurements. The main goal of this work is the location, in real time, of fixed or moving platforms through satellites with low orbits in remote areas, as in the Antarctica, where the conventional means of communication and radio are hardly available. The proposal is to use the system called ARGOS, which is a set of platforms and satellites by series NOAA (National Oceanic and Atmospheric Administration), and reception stations. Nowadays, this system provides the location, but a posteriori through playback remote. However in our context, the location in real time is necessary to locate and ransom people in the Antarctica and it is quite useful in the tracking of animals in scientific researches. It can also be used in the oceanography, meteorology and geology fields.

The calculation in real time will be made through an INPE's "estaçonete" (local station reception) in the region of the Antarctica. This "estacionete" will collect the data transmitted by the visible satellites. The system ARGOS operates with at means two NOAA satellites in the same Earth orbit, but, in opposite phase each other. This orbit is polar, circular, with orbital period of 102 minutes, and altitude of approximately 850 Km. Each satellite makes about 14,1 revolutions a day and receives transmissions of the platforms within a visibility range of around 5000 Km. The possible overfly passes to capture data of the transmitters increase with the latitude. In the poles, these satellites fly over platforms every single pass. The duration of platform visibility (contact) by the satellites lasts 10 minutes on the average.

The platforms (or transmitters) transmit data through the uplink signs to the satellites in UHF (401.650 MHz $\pm$ 4 KHz) frequency band. On board the satellite, the platform is identified as well as the received frequency and data are recorded. These records are re-transmitted, in real time, in VHF (137 MHz) frequency band to the "estaçonete" on the ground. Thus, the measure of Doppler frequency shift in real time is available and can be processed through estimation techniques such as the sequential least squares or the Kalman filter methods. Assuming that the satellites ephemerides are known, it is possible to perform the platform location in real time. This technique can also be used to calculate the location of DCPs (Data Collecting Platforms) using the Brazilian satellite SCD.