ABSTRACT

Inter-satellite-link (ISL) is a technology that allows communication between one satellite and another. ISL is an important part of the development of satellite networks, because in the case of data transmission, another satellite is needed so that the data reaches the satellite closest to the Master Control Station (MCS). Later in the MCS, the data received will be further processed. In the ISL system required a device used for the transmission medium of the antenna. The antenna will emit radiation to the other satellites to communicate. However, the movement between satellites and tumbling effect ,varies greatly and hard to prdict between satellites and other satellites, so the reception of transmit wave patterns is not optimal. With beamforming technique, the problem can be overcome.

Beamforming is a technique in the telecommunications world to focus the beam of a wave toward the desired target. To perform beamforming techniques requires estimation of target signal direction called Direction of Arrival (DOA).

In this final project the simulation using MUSIC algorithm resulted that increasing element array will increase accuracy level, with mininum number of antenna is 50 element with 0.5λ, where computing time of MUSIC algorithm faster than satellite time to move one degree in their orbit, which is about 0.96 seconds .

Keywords: Direction of Arrival, Inter-Satellite-Link (ISL), MUSIC algorithm, eigenvalue, matrix covariance, PMUSIC (dB)