

第IV部 国内基礎実験結果とその応用

IV. THE RESULTS OF THE DOMESTIC BASIC EXPERIMENT, AND ITS APPLICATIONS.

In this part, two **final** results reduced from the data of the domeetic basic VLBI experiment are described.

In the first chapter IV-1., "Orbit determination of geosynchronous satellites by the VLBI technique" is explained with the use of the VLBI data by receiving ATS-1 sntellite noise. The computing program was "KODS", which was the modified one of NASA satellite orbit determination program "DODS". The orbit determination method by VLBI data is very sensitive to satellite movement parallel to the baseline. This fact is a strong point as compared with the ordinary range and range rate method, which is sensitive to the direction of line of sight. The results show the range error of about 30 km, by being compared with NASA predicted data of ATS-1, which was due to short baseline of 121 km between Kashima and Yokosuka. Computer simulation is also given for larger baseline, in case of which the accuracy of orbit determination will be more impressed, and there is a possibility that we can determine the positional bias of each earth station. It is also become clear that observability to each parameter is good when the direction of baseline have an inclination to the equator.

In chapter IV-2., analysys of the radio source observation of 3C273B at the time of the VLBI experiment is described. Cross-correlation functions for each 450μ sec were corrected for sampling and subjected to Fourier Transformation. These cross-correlation functions were integrated for 0.3 sec after fringe-stopping. The delay time difference between the estimated and the observational value was about $2\text{ n sec} \pm 27\text{ n sec}$.