第II部　VLBI国内基礎実験システム

II.　DOMESTIC VLBI SYSTEM

In part III, our first domestic VLBI system developed by the Radio Research Laboratories are introduced on each part along transmission of VLBI signal. Using this system, the first Japanese VLBI experiment was performed between Kashima 26 mϕ antenna (R. R. L.) and Yokosuka 12. 8mϕ antenna (Nippon Telegraph and Telephone Public Corporation), from Jan. 28 to Feb. 4, 1977.

In II-1. chapter, the whole of the system is introduced. The system was developed, partly being made reference to Mark II system which is frequently used in U. S. A.

In next chapter II-2., there is a description on radio sources used in the experiment. We utilized two kinds of radio sources : the one, satellite noises of geostationary satellites, ATS-1 and Intelsat IV (F-8), the other, celestial radio sources, 3C84, 3C273B and 3C454. 3. The experimental procedure is also referred to.

In chapter II-3., receiver, local oscillator system used and their frequency stability are explained. According to the measured frequency stability of local oscillator system, including Cs standard, frequency synthesizer and multiplier, about two seconds of time, in which phase fluctuation is belower than about one radian, are allowed as one coherent observational time. Clipped noises are also discussed.

In chapter II-4., recording signal generator, which adjusts the VLBI signal before recording on magnetic tape is explained. That apparatus conists of sampler, time signal encoder, digital diphase coder and formatter, in view of the functional point.

In chapter II-5., decoding and correlating systems for the VLBI experiment, which are composed of very accurate and high speed hardwares and NEAC 3100 assembler softwares, are explained. The hardwares are divided into three parts, namely, VTR recording, VTR reproducing and the correlating parts, The softwares are made up of two routines, namely, computer controlling and core monitoring routines. In order to check bit stream, the core monitoring routine has a "drop out" check subroutine with Hamming distance.