THE UNIVERSITY OF MICHIGAN
RADIO ASTRONOMY OBSERVATORY

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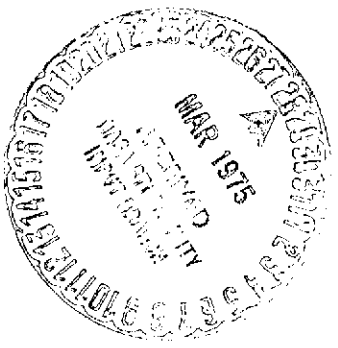

DEPARTMENT OF ASTRONOMY

UM/RAO Report 75-1

OGO-V RADIO BURST ANALYSIS

Final Scientific Report
NASA Contract NGR-23-005-549

Submitted by:

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The work done falls into two categories. First, preparation of papers and talks based on previous analysis (NASA Contract NAS 5-9099), and second, new analysis of the data.

The published papers based on previous analysis are:

"Solar Wind Density Models from Km-Wave Type-III Bursts," by Hector Alvarez and F. T. Haddock, Solar Phys., 29, 197, 1973.

"The Prevalence of Second Harmonic Radiation in Type-III Bursts Observed at Kilometric Wavelengths," by F. T. Haddock and Hector Alvarez, Solar Phys., 29, 183, 1973.

"Decay Time of Type-III Solar Bursts observed at Kilometric Wavelengths," by Hector Alvarez and F. T. Haddock, Solar Phys., 30, 175, 1973.

"Decay Time of Type-III Solar Bursts," by Hector Alvarez and F. T. Haddock in "High Energy Phenomena on the Sun," R. Ramaty and R. G. Stone editors. NASA SP-342, 1973.

One talk was presented at the Symposium on "High Energy Phenomena on the Sun" sponsored by NASA and held at NASA's Goddard Space Flight Center, September 28-30, 1972.

The new analysis of the data centered on the study of km-wave type-III bursts associated with Hα flares. The analysis included also bursts observed by the University of Michigan Radio Astronomy experiment aboard the Interplanetary Monitoring Platform 6 (IMP-6). Data from IMP-6 overlaps OGO-5's by a few months. The observed bursts were grouped according to the lowest frequency at which they were detected. For each group was obtained the frequency of occurrence versus the heliographic longitude of the associated optical flare. It was found that flares occurring east of a certain cut-off longitude do not produce bursts detectable near the earth

below a given radio frequency. The mean longitude and the extreme eastern end of the longitude distribution both shift to the west as the radio frequency decreases. This was interpreted in terms of radio wave propagation effects and curved trajectories of the burst exciter.

A paper based on the above study was presented at the A.A.S. Solar Physics Division meeting, Las Cruces, N. M., January 1973.

Some strong bursts were detected down to 50 kHz during the overlap of OGO-5 and IMP-6 data.

An analysis of these events was begun with the purpose of obtaining a calibration of the IMP-6 radiometer.