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Report, 16 Sep. 1985 - 15 Mar. 1986
(Maryland Univ.) 13 p

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Semi-Annual progress Report

to the

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Grant NSG 5313

Entitled:

RESONANCE FLUORESCENCE IN ATMOSPHERIC GASES

For the period:

September 16, 1985 - March 15, 1986

Principal Investigator

Thomas J. McIlrath



UNIVERSITY OF MARYLAND

I. Introduction

This program exists to provide support for the balloon stratospheric remote sensing program of NASA/GSFC. Its purpose is to provide laboratory data and engineering support for the remote sensing effort. The goals and efforts are chosen in response to both short term and long term needs of the lidar effort.

II. Personnel

During the period of this grant the principal investigator was on sabbatical leave from the University of Maryland. The laboratory effort was continued under the direction of trained technical staff with the participation of graduate and undergraduate students.

III. Equipment

During the grant year progress was made on interfacing a Fizeau wave meter to a microcomputer in a way that is compatible with the electronics of the stratospheric balloon system. Installation was begun on a low divergence excimer laser system funded by other agencies. It is expected that this will become a general laboratory tool of specific use for Raman studies relevant to the lidar program.

IV. Publications

Two publications, previously reported, concerning determination of two-photon cross sections using four-wave mixing appeared in press. They are:

1. J. Burris and T. J. McIlrath, J. Opt. Soc. Am. B 2, 1307 (1985).
"Experimental Method for the Determination of Two-Photon Cross Sections Using Four-Wave Mixing"
2. J. Burris and T. J. McIlrath, J. Opt. Soc. Am. B 2, 1313 (1985).
"Theoretical Study Relating the Two-Photon Absorption Cross Section to the Susceptibility Controlling Four-Wave Mixing".

Copies of these publications are attached.