ROCKET and LABORATORY STUDIES in ASTRONOMY

FINAL REPORT

NASA Grant NAG5-5122

March 1, 1997 to February 28, 2001

Prepared by

Paul D. Feldman, Principal Investigator
Center for Astrophysical Sciences
The Johns Hopkins University
Baltimore, Maryland 21218

December 19, 2001
FINAL REPORT

This is the final report for NASA Grant NAG5-5122 and covers the period from March 1, 1997 to February 28, 2001. This grant was a continuation of a program in rocket and laboratory studies in ultraviolet astronomy that was supported by NASA grant NAG5-619. As of March 1, 2001, this program is continuing under grant NAG5-5315.

During the period of the grant, annual status reports have been submitted detailing the scientific achievements and current objectives of each report period. These will not be repeated here. Among the highlights of the program are four successful rocket launches including participation in the campaign to study comet Hale-Bopp in April 1997. We have continued our emphasis on long-slit spectroscopy of extended sources in the shorter wavelength far-ultraviolet, necessitating the development of evacuated telescope/spectrograph payloads. Finally, we also note the use of our ultraviolet calibration facilities in support of other sounding rocket investigators and for other space missions such as the Far Ultraviolet Spectroscopic Explorer. We include a list of the sounding rocket launches performed under NASA sponsorship during this period (Appendix A), a list of Ph.D. degrees awarded to students who worked in this program (Appendix B), and a summary bibliography of publications between 1997 and 2001 (Appendix C).
### Appendix A

#### SUMMARY OF SOUNDING ROCKET LAUNCHES 1997-2001

<table>
<thead>
<tr>
<th>LAUNCH #</th>
<th>DAY</th>
<th>MONTH</th>
<th>YEAR</th>
<th>TARGET</th>
<th>VEHICLE</th>
<th>COMMENTS</th>
<th>RANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>36.156UG</td>
<td>5</td>
<td>April</td>
<td>1997</td>
<td>Comet Hale-Bopp</td>
<td>Black Brant- M70 (S-19)</td>
<td>FOT XIII</td>
<td>White Sands</td>
</tr>
<tr>
<td>36.136UG</td>
<td>14</td>
<td>June</td>
<td>1999</td>
<td>M27</td>
<td>Black Brant- M70 (S-19)</td>
<td>FOT XIV</td>
<td>White Sands</td>
</tr>
<tr>
<td>36.186UG</td>
<td>11</td>
<td>February</td>
<td>2000</td>
<td>NGC2023</td>
<td>Black Brant- M70 (S-19)</td>
<td>FOT XV</td>
<td>White Sands</td>
</tr>
<tr>
<td>36.198UG</td>
<td>9</td>
<td>February</td>
<td>2001</td>
<td>IC405</td>
<td>Black Brant- M70 (S-19)</td>
<td>FOT XVI</td>
<td>White Sands</td>
</tr>
</tbody>
</table>
Appendix B

STUDENTS TRAINED IN GRADUATE SPACE SCIENCE PROGRAMS
1997 - 2001

ERIC B. BURGH
Ph.D. 2001
Dissertation: *Far-ultraviolet Studies of Dust Extinction and Scattering*
Present Address: University of Wisconsin – Madison, WI 53706

JASON B. McPHATE
Ph.D. 1998
Dissertation: *Carbon Monoxide in Comets*
Present Address: UC Berkeley, Berkeley, CA 94720
Appendix C

PUBLICATIONS 1997-2001

This list contains papers of research done entirely or partially under NASA grant NAG 5-5122.


PAPERS PRESENTED

P. D. Feldman, Recent Observations of Comets from Space, Colloquium, Johns Hopkins University Applied Physics Laboratory, Laurel, Maryland, April 18, 1997.


