

FINAL REPORT

NASA Grant No. NGR 44-004-121

SPECIFIC PROBLEMS IN COSMIC RAY RESEARCH  
SOLVABLE THROUGH USE OF PIONEERS 6-9 SPACECRAFTS

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Specific Problems in Cosmic Ray Research Solvable  
Through Use of Pioneers 6-9 Spacecrafts

The University of Texas at Dallas Pioneer program has seen the successful launch of four deep space probes. The first of these, Pioneer 6 (launched in 1965), provided the first measurements of the interplanetary cosmic ray flux, and the subsequent instruments have continued to provide new and important information on the nature of both galactic and solar cosmic rays.

Many of the results based on data from the Pioneer cosmic ray detectors have been published in the scientific literature or presented in papers delivered at scientific meetings. A listing of these presentations is given in the bibliography. A brief summary of the areas of study in which the Pioneer data have been used would include:

- a) Studies of the temporal variation of galactic and solar flare particles;
- b) Studies of the heliocentric longitude gradients in the solar flare cosmic ray flux using simultaneous measurements from several spacecrafts;
- c) Studies of the decay phase of solar flare effects;
- d) Studies of the correlation between the cosmic ray flux and the local interplanetary magnetic field;
- e) Studies of the character of the particle anisotropy during the various phases of solar flare events;
- f) Studies of the influence of interplanetary disturbances on the cosmic ray flux; and
- g) Studies of low energy particle propagation during specific solar flare events.

Reduced data from the Pioneer 6-9 spacecrafts have been submitted to the National Space Science Data Center.

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