

PREFACE

The HEDS-UP (Human Exploration and Development of Space–University Partners) program has been instituted to build new relationships between university faculty and students and NASA in support of the Human Exploration and Development of Space. The program provides a mechanism whereby university students can explore problems of interest to NASA through student design projects, led by a university professor or mentor, and aided by the HEDS-UP staff. HEDS-UP advises on the type of project that is of interest and provides contacts to NASA and industry professionals who may serve as mentors to the student project. Students become acquainted with objectives, strategies, development issues, and technologic characteristics of space exploration programs. In doing so, they are preparing themselves for future engineering challenges and may well find that the program is on their critical path to professional advancement. Many of the ideas are novel and are of interest to NASA. Industry finds in HEDS-UP a mechanism to meet many bright and enthusiastic students who are about to enter the work force. The universities become more involved with space exploration and the students are encouraged to include an outreach element in their work, to bring their efforts and their excitement to others in their universities or in their communities.

The climax of the HEDS-UP program each year is the HEDS-UP Forum, held at the Lunar and Planetary Institute. Here, the university teams bring their projects — written reports, oral reports, models, prototypes, and experiment demonstrations — to show to one another and to NASA and industry participants. NASA, industry, and academic professionals present discussions of problems of current interest to space exploration. All meet informally around the posters that each of the teams brings to the Forum.

This year the HEDS-UP Forum was held May 4–5 at the Lunar and Planetary Institute in Houston. Thirteen university teams from twelve universities participated. Eleven teams were undergraduate teams; two were composed of graduate students. Each team contributed a 20-page written report, and these reports are reproduced in this volume. The agenda for the Forum shows the order of presentation of the talks by the universities and by NASA and Lunar and Planetary Institute presenters. The specially invited NASA presenters included Mr. John Connolly, Dr. David McKay and Dr. Donald Henninger of the NASA Johnson Space Center, Dr. Paul Spudis and Dr. Steve Clifford of the Lunar and Planetary Institute, and Dr. Pascal Lee of the NASA Ames Research Center.

The Forum could not have been carried out without the efforts of Sharon Steahle and Kay Labuda of the Lunar and Planetary Institute, and many other Institute staff members contributed to the effort. Mike Duke and Kay Labuda took the photographs that are included in this report. Renee Dotson was responsible for the final editing.

This report, including its downloadable photos, is accessible through the HEDS-UP Web site (<http://www.lpi.usra.edu/lpi/HEDS-UP/>). The Web site also includes additional information for prospective participants.

The LPI staff is looking forward to the next year of HEDS-UP, in which we hope to make further improvements and involve additional university teams.

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