

Tethered Satellite Systems

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THE following three papers on tethered satellite systems grew out of session 110 of the AIAA 26th Aerospace Sciences Meeting, held in Reno, Nevada, in January 1988. Interest in such systems, which goes back several years, has been evinced by NASA, various Italian space research activities, and, most recently, by the Japanese. While no tethered spacecraft have yet been flown, two experimental systems, TSS-1 and TSS-2, are under development as a joint U.S.-Italian effort. Three meetings dealing with the subject have been held to date: the September 1986 First International Conference on Tethers in Space, held in Arlington, Virginia; the January 1987 NASA workshop on Outer Atmospheric Research with Tethered Satellites, held in Menlo Park, California; and the October 1987 Second International Conference

on Tethers in Space, held in Venice, Italy. The Third International Conference on Tethers in Space: Toward Flight will be held in San Francisco in May of 1989.

The advantages of tethered spacecraft flown from a space transportation system such as the Shuttle are fairly obvious: extension of the experimental regime to regions not otherwise accessible, particularly the atmosphere between altitudes of 100–150 km. Scientific areas that can be exploited with the aid of tethers include atmospheric science, aerothermodynamics, and magnetospheric electrodynamics. The following papers report on these topics as well as on some of the engineering aspects involved. Together, they describe the state-of-the-art as it existed in 1988.

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