Review of inflatable booms for deployable space structures: packing and rigidization
Space-borne membrane antenna structures are mainly classified as either parabolic or planar membrane antenna structures. For parabolic membrane antenna structures, there are five deploying and forming methods, including inflation, inflation-rigidization, elastic ribs driven, Shape Memory Polymer (SMP)-inflation, and electrostatic forming. The development and detailed comparison of these five methods are presented. A typical inflatable antenna structure is shown in Figure 1. The antenna is deployed by an inflation system mounted near the feed. In the process of inflation-rigidization, the membrane reflector is rigidized after being inflated to the desired parabolic shape and inflation pressure is released. M. Schenk, Andrew Viquerat, +1 author Simon D. Guest. Published 2014. Engineering. Journal of Spacecraft and Rockets. Two critical and interdependent aspects of designing inflatable cylindrical booms for space applications are i) packaging methods that enable compact stowage and ensure reliable deployment, and ii... CONTINUE READING. View PDF. Review of inflatable booms for deployable space structures: packing and rigidization. M Schenk, AD Viquerat, KA Seffen, SD Guest. Journal of Spacecraft and Rockets 51 (3), 762-778, 2014. 127. 2014. A Viquerat, M Schenk, B Sanders, V Lappas. European Conference on Spacecraft Structures, Materials and Environmental ..., 2014. 24. 2014. Folded textured sheets. M Schenk, SD GUEST. Symposium of the International Association for Shell and Spatial Structures ..., 2010. 23. 2010. Statically balanced tensegrity mechanisms. M Schenk. A literature review. Department of BioMechanical Engineering. Delft ..., 2005.