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Paper Title:	**FalconSAT-7, A Deployable Membrane Optic Telescope**

Abstract:

We report on the development of the flight model of FalconSAT-7 (FS-7), a 3U Cubesat with a deployable membrane optic telescope payload. The program is run by undergraduate cadets at the Air Force Academy and is supported by graduate students at the Air Force Institute of Technology. The purpose of the mission is to demonstrate a deployable telescope with larger aperture than the spacecraft structure. The telescope deploys from one end of FS-7 and has a clear aperture of 20cm, twice the cross section of the host spacecraft structure. This novel payload is made possible by the use of a thin (28 micron) membrane optic using diffractive principles to focus H-alpha light from the sun onto an onboard camera. The membrane optic is deployed using a set of spring loaded pantographs that tension the membrane and hold it flat. The Colony-II program office provided the 3U bus which is built by the Boeing Company. The FS-7 mission is supported by the Defense Advanced Research Projects Agency (DARPA) Tactical Technology Office. FS-7 will be delivered to the Space Test Program for launch integration in late 2015 and is expected to launch on STP-2 in the spring of 2016.