

SPACE COMMUNICATIONS AND NAVIGATION SYMPOSIUM (B2)
Advanced Technologies for Space Communications and Navigation (5)

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OPTICAL FEEDER LINK FROM ANTARCTIC LATITUDES - SYSTEM ARCHITECTURE AND
OPERATIONS CONCEPT**Abstract**

Polar Ground Stations have an important role in the context of data reception from earth observation satellites. However, there are significant challenges associated with the repatriation of these large amounts of data from Antarctic stations to the user. The EFAL (EDRS Feeder Link from Antarctic Latitudes) study examines the possibility of optical data transmission from Antarctica via the upcoming operational European Data Relay System (EDRS) into the European data network. The technical feasibility of the connection as well as operational and commercial aspects will be analyzed.

The technical feasibility mainly depends on two conditions: Firstly the effect of turbulent atmosphere on the laser connection at extremely low elevations of approximately 9 degrees, and secondly the availability of an optical link, which is determined by the cloud statistics. Both aspects are examined for an exemplary location in Antarctica. Additionally, an outline of the operations concept will be presented.