

Lightweight Deployable Integrable Antenna (LiDIA)

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Abstract:

There is great need and desire for high data rate communications solutions with low mass and volume requirements. This is especially true for small satellites, solar sail spacecraft, and/or missions beyond low earth orbit. This critical technology gap has been recognized by NASA, NOAA, DOD, and commercial spacecraft entities. To fill this technology gap, the Lightweight Deployable Integrable Antenna (LiDIA) solution enables high gain antenna arrays with extraordinarily low mass and stowage volume. This deployable antenna is extensible to very large antenna arrays and compatible with integration into large solar sails or thin film photovoltaic arrays. It can be packaged and deployed like a solar sail or on part of the solar sail. This provides high data rate communication over long distances with lower antenna mass and stowage volume. Furthermore, it enables long distance spacecraft to spacecraft communication which can offload ground assets and enhance mission capabilities.