

## User Guide

### Abstract:

Radio science data collected from NASA's Deep Space Networks (DSNs) are made available in various formats through NASA's Planetary Data System (PDS). The majority of these data are packed in complex formats, making them inaccessible to users without specialized knowledge. In this paper, we present a Python-based tool that can preprocess the closed-loop archival tracking data files (ATDFs), produce Doppler and range observables, and write them in an ASCII table along with ancillary information. ATDFs are the earliest closed-loop radio science products with limited available documentation. Most data processing software (e.g., orbit determination software) cannot use them directly, thus limiting the utilization of these data. As such, the vast majority of historical closed-loop radio science data have not yet been processed with modern software and with our improved understanding of the solar system. The preprocessing tool presented in this paper makes it possible to revisit such historical data using modern techniques and software to conduct crucial radio science experiments.

### Requiriemnts:

Python 3.6 and above

### Help Command:

Python atdf2ascii.py -h

Command to process TRK-2-25 formatted DSN file:

```
Python atdf2ascii.py -i input_file.tdf [options ...]
```

### NOTE:

A manuscript describing this code's architecture, formulation, and usability has been accepted for publication in the SoftwareX Journal.

(See verma-paper.pdf)

Please cite the software as follows:

```
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