Convenient Fringe-Fit Data Storage in Python Dictionaries for VO2187 Experiment

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Motivation

In Very Long Baseline Interferometry (VLBI), the correlated and fringe-fit data are stored in the Mark4 format, a 2-level directory tree. The top directory name is a 4-digit number, below it contains directories named <doy>-<time>[<letter>]. Each of these directories holds the data files for a scan: the cross- and auto-correlated data, and the fringe-fit data. For example:

2187

├── 187-1803b

├── 0458-020.3HJQAB

├── E..3HJQAB

├── EE..3HJQAB

├── G..3HJQAB

├── GE..3HJQAB

├── GE.X.6.3HJQAB

├── HE..3HJQAB

├── HE.X.2.3HJQAB  
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The file names only have the baseline letters. The fringe-fit file names also have “.X.”. In order to access the information stored in the files the package HOPS is used.

При такой организации информации задачи выбора данных, соответствующих нескольким критериям (к примеру, временной отрезок сканирования для базовых линий, составляющих треугольное замыкание) становятся довольно нетривиальными. Кроме того, много времени тратится на открытие множества файлов.

With such an organization of information, the tasks of selecting data that meets several criteria (for example, the time interval of scanning for baselines that make up a triangular closure) become quite non-trivial. In addition, a lot of time is spent opening multiple files.