

Primer for Reading Acceleration Data Files From PIMS Acceleration Archive Server

You should ignore the relative time values *within* PAD files. The following comprise the rest of the heuristics applied by the PIMS team to load acceleration data from one or more data files.

For a **single PAD file** keep the following in mind:

- the GMT start time explicitly given in the filename corresponds to the timestamp for the first datum in that file [call this t_0]
- the sample rate (fs) from corresponding header file gives time for all other data [let $dt = 1/fs$ and generate your own times like this: $t_0, t_0+dt, t_0+2dt, \dots$]
- the GMT end time explicitly given in the filename is to be ignored

A **series of PAD files** is defined as more than one, all consecutive in time order (using GMT start in filenames to order) with the 2nd through the last file all having the "+" sign, which indicates contiguous data for this series. To load data from a series of PAD files, use the following approach:

- load data from first file as described above
- concatenate (append) data from all subsequent files in the series using dt to generate time values

A **set of PAD files** is defined as more than one series of PAD files. This implies that at least one file in the set has a minus "-" sign, which indicates a gap. To load data from a set of PAD files, use the following approach:

- load data from the first series as described above and note the GMT end time that you calculated on your own from this series and call this t_1
- load data from the 2nd series as you would for any series of PAD files and note the GMT start time that you calculated on your own from this 2nd series and call this t_2
- if " t_2 minus t_1 " corresponds to integer number of samples (based on fs), then simply fill gap between t_1 and t_2 with NaNs and append those along with the 2nd series' data to the end of that from first series; otherwise, " t_2 minus t_1 " does not correspond to integer number of samples, so adjust t_2 to "snap to nearest grid point"; at most, t_2 will only be adjusted by $dt/2$, then fill gap between t_1 and t_2 with NaNs and append those along with the 2nd series' data to the end of that from first series
- repeat with series 3 through end as done with series 2