The Subroutine to Read the Configuration File for the Neutral Particle Spectrometer Control and Monitor Software

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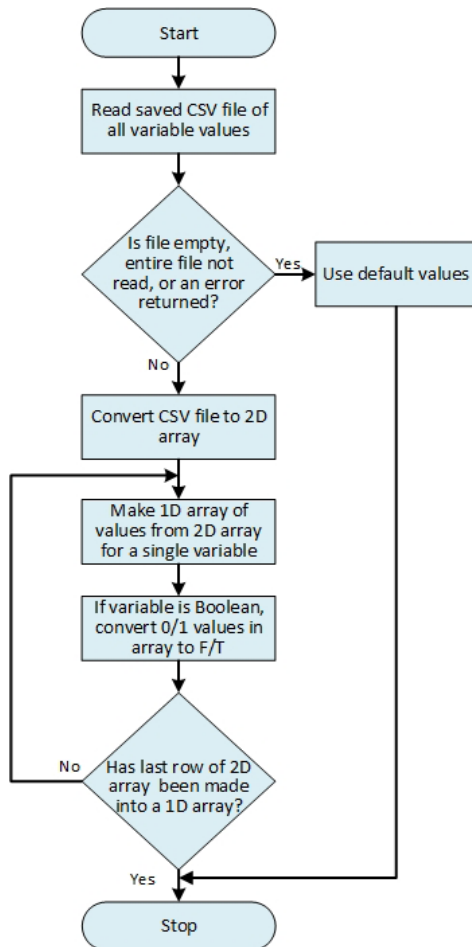
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This note presents details of the subroutine for reading a configuration file, part of the code written in LabVIEW to control and monitor the Neutral Particle Spectrometer (NPS)

LabVIEW code was written to control and monitor the front and back crystal zones, the electronics zone, the detector frame, and the Hall [1]. Figure 1 is a flowchart of the subroutine to read the configuration file.

FIG. 1. Flowchart of the subroutine to read the configuration file.

The subroutine begins with the reading of all saved variable values of the current configuration file, a comma separated (CSV) file. After, the file is checked to be sure it is not empty or that only part of the file was read. If either of these instances occurred, or an error is returned, then default values are used and the subroutine stops.

If none of the three previous situations occurs, then the CSV file is converted to a two-dimensional array with 97 rows (variables) and 222 columns (channels) of numeric values. The array values are then duplicated into 97 one-dimensional arrays, one array for each variable. If the variable has Boolean values, the numeric 0 and 1 values are converted to F and T values. Once all 97 subarrays have been built, the subroutine stops.

To conclude, as part of the overall LabVIEW code that controls and monitors the NPS, a subroutine is used to read the configuration file.

[1] M.A. Antonioli, et al., *Overview of Control and Monitoring Software for the Neutral Particle Spectrometer*, DSG-Note 2023-36, 2023.