

# 1. INTRODUCTION

FEAST (**F**inite **E**lement **A**nalysis of **S**tructures) is a structural analysis software based on Finite Element Method. The latest version FEAST<sup>SMT</sup> provides improved computational capabilities for linear static, free-vibration, buckling, transient response, frequency response, and random response analyses. FEAST<sup>SMT</sup>, coded in C++, is capable of solving large order structural problems exploiting modern multi-core computing platforms through multithreading and sub structuring. This manual describes format of specification of input data to FEAST<sup>SMT</sup>.

The software is supported by a graphical pre and post-processing software, PreWin with a graphical user interface suitable for both UNIX and Windows.

The input data file is a text file containing several data lines corresponding to various data that constitute a finite element model including descriptions of nodes, elements, constraints, loads etc. A data line in the input file corresponds to a single data item with several numeric or alphanumeric fields separated by the character comma (,).

- 1 The first field of a data line is a unique character tag that identifies the item.
- 2 A data line can contain both numeric and alphanumeric fields. An empty field (separated by commas) is interpreted as zero for numeric field and as empty string for a non-numeric field
- 3 A data item is, in general, described in a single line of text, but long fields like lists of element Ids, node Ids etc can be split into multiple lines using the continuation character '&'.
- 4 There can be any number of empty lines between data lines
- 5 Data lines beginning with the character '#' are treated as comment lines
- 6 In the input file the data items must be specified in the following order
  - a. The header **\*SMTDATA xxx** where xxx is the version number
  - b. Analysis control data – **ANTYPE**
  - c. List of nodes (**N**,...)
  - d. Properties that element refer to, like, material (**IMAT**, **OMAT**), geometric properties (**THICK**, **BP**, **RP**,**MANGLE**,**LAYUP**, **SOFF**)

- e. List of elements (**E**,,..)
  - f. All other data
- 7 FEAST<sup>SMT</sup> assumes a specific ordering of input data-lines only for items (a) and (b).The other items - (c) to (f) may be specified in any order.
- 8 Fields given in bold characters must be typed as they are. For all other fields, some substitution has to be made as described in the manual.