

3. Letters J, K, L, M, or N when used alone are indices.
4. A symbol starting with M is a control number. Examples are MAT, MF, MT.
5. A symbol starting with L is a test number.
6. A symbol starting with N is a count of items.

0.6.2 Representing Numbers in ENDF

All numbers are given in fields of 11 ~~columns~~ **characters**. For fields representing integers, the fields have the following form:

\pm nnnnnnnnnn

Here, **n** is a number between 0–9 ~~or a leading blank character~~. Therefore, integers are limited to a maximum absolute value of 9,999,999,999. **Leading and/or trailing whitespace are permissible within the 11 character field**. Integers can be read by the Fortran “I11” format specification.

For floating point numbers, the situation is less clear-cut. As we are limited to 11 characters, achieving the maximum possible precision while maintaining readability of the files was a challenge. Table 17 shows the forms used in ENDF files. Note that the formats are “E-less”, adding one digit of precision. These forms can be read by the “E11.0” format specification of **Fortran**. However, a special subroutine must be used to output numbers in these forms. If evaluations are produced using numbers written by “1PE11.5” (that is, 1.2345Enn, the numbers will be standardized into 6 or 7 digit form, but the real precision will remain at the 5 digit level. In other languages such as C/C++, Java, or Python, special I/O routines will need to be written to read ENDF floats.

We comment that floating point numbers in the ENDF format are mid-way between single and double precision IEEE floating point numbers in terms of **the** accuracy of the numbers represented.

Table 17: Floating point number formats in the ENDF format. Note that the “E” is absent from the exponent. Here, the significand is a sequence of numbers **n** is between 0–9 ~~or a leading blank character~~ and the exponent is one to three numbers **e** between 0–9. **Leading and/or trailing whitespace are permissible**.

Form	Maximum exponent	Significant digits
\pm n.nnnnnnnn	n/a	9
\pm n.nnnnnn \pm e	9	7
\pm n.nnnnn \pm ee	99	6
\pm n.nnnn \pm eee	308	5