

How to include other particle shapes in the program

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The user can easily modify routines in NONAXSYM to generate particles with other geometries. Note that the list of parameters must be maintained and only geometries with an analytical description of the surface can be implemented.

Alternatively, the option `FileGeom = .true.`, causes the code to read the particle geometry information from the file `FileFEM`. The `FileFEM` is read by the routine `"read_FileFEM"` from the file `"InputOutput.f90"`. The user can customize `"read_FileFEM"` as needed to conform to the manner in which the particle geometry is stored in the file `FileFEM`. However, as supplied, `"read_FileFEM"` expects the file `FileFEM` to have the following structure:

- one line providing the number of smooth surfaces `Nfaces`; the format for reading `Nfaces` is `i7`, i.e.,

```
read (iFEM, "(i7)", iostat = ios) Nfaces;
```

- a set of `Nfaces` sequences of data specifying the geometry parameters on each smooth surface; each sequence includes:

- one line containing the number of surface elements (vertices) `NVvr`; the format for reading `NVvr` is `i7`, i.e.,

```
read (iFEM, "(i7)", iostat = ios) NVvr;
```

- `NVvr` lines containing the current index `ielem`, the Cartesian coordinates of the surface element center: $x = r(1)$, $y = r(2)$ and $z = r(3)$, the Cartesian components of the unit normal vector at the surface element center:

$nx = n(1)$, $ny = n(2)$ and $nz = n(3)$, and the area of the surface element;

the format for reading the data is:

```
read (iFEM, "(i7,2x,7(e15.7,2x))", iostat = ios)
```

```
ielem, r(1), r(2), r(3), n(1), n(2), n(3), area.
```

As provided, the file `FileFEM` is contained in the directory `"GEOMFILES"`.