For example, in `/project/projectdirs/m1248/guofan/T.5200`, there are two metadata files

`grid_metadata_electron_tracer.h5p` and `grid_metadata_ion_tracer.h5p`. You can use `h5dump` to show information inside.

For example,

```
h5dump -H grid_metadata_electron_tracer.h5p
```

You will get

```
HDF5 "grid_metadata_electron_tracer.h5p" {
GROUP "/" {
   GROUP "Step#5200" {
      DATASET "dx" {
         DATATYPE  H5T_IEEE_F32LE
         DATASPACE  SIMPLE { ( 19800 ) / ( 19800 ) }
      }
      DATASET "dy" {
         DATATYPE  H5T_IEEE_F32LE
         DATASPACE  SIMPLE { ( 19800 ) / ( 19800 ) }
      }
      DATASET "dz" {
         DATATYPE  H5T_IEEE_F32LE
         DATASPACE  SIMPLE { ( 19800 ) / ( 19800 ) }
      }
      DATASET "np_local" {
         DATATYPE  H5T_STD_I32LE
         DATASPACE  SIMPLE { ( 19800 ) / ( 19800 ) }
      }
      DATASET "nx" {
         DATATYPE  H5T_STD_I32LE
         DATASPACE  SIMPLE { ( 19800 ) / ( 19800 ) }
      }
      DATASET "ny" {
         DATATYPE  H5T_STD_I32LE
         DATASPACE  SIMPLE { ( 19800 ) / ( 19800 ) }
      }
      DATASET "nz" {
         DATATYPE  H5T_STD_I32LE
         DATASPACE  SIMPLE { ( 19800 ) / ( 19800 ) }
      }
      DATASET "x0" {
         DATATYPE  H5T_IEEE_F32LE
         DATASPACE  SIMPLE { ( 19800 ) / ( 19800 ) }
      }
      DATASET "y0" {
```

```
         DATATYPE  H5T_IEEE_F32LE
         DATASPACE  SIMPLE { ( 19800 ) / ( 19800 ) }
      }
      DATASET "z0" {
         DATATYPE  H5T_IEEE_F32LE
         DATASPACE  SIMPLE { ( 19800 ) / ( 19800 ) }
      }
   }
}
}
```

1. `dx`, `dy`, `dz` are grid sizes for 19800 domains, but they should be the same for each local domain in this run.
2. `np_local` is number of tracers in each local domain (`MPI rank`).
3. `nx`, `ny`, `nz` are numbers of cells along each dimension in each local domain. Again, they should be the same for each local domain in this run.
4. `x0`, `y0`, `z0` are the global positions of lower-left corner of the local domain. They are different for each local domain.

- The cell index of local domain is `[0:nx+1, 0:ny+1, 0:nz+1]`, where 0 and `nx+1`, `ny+1`, and `nz+1` are ghost cells.
- The local cell index `(ix, iy, iz)` is converted into 1D index `(ix + iy * (nx+2) + iz * (nx+2)*(ny+2))`, where `ix`$\in$`[1,nx]`, `iy`$\in$`[1,ny]`, `iz`$\in$`[1,nz]`, excluding ghost cells.
- Particle local positions are `dX`, `dY`, `dZ`, which are from -1 to 1. The `i` property of particles is actually the 1D index mentioned above.

The global particle positions are then

```
x = ( i%(nx+2) + (dX-1)/2.0 ) * dx + x0
y = ((i/(nx+2))%(ny+2) + (dY-1)/2.0 ) * dy + y0
z = ( i/((nx+2)*(ny+2)) + (dZ-1)/2.0 ) * dz + z0
```