

# ACDTool

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## Introduction

ACDTool (executable name acdtool) is a collection of tools that help users to do preprocessing and postprocessing. Please only run it in serial unless it is specifically mentioned it is parallel. Otherwise, the parallel run will yield undefined results. Particularly, it can do the following:

## Usage

1. convert cubit mesh in GENESIS format to SLAC netcdf format mesh that can be used in SLAC codes.

```
acdtool meshconvert cubitq netcdf mesh.gen mesh.ncdf  
acdtool meshconvert cubit netcdf mesh.gen mesh.ncdf
```

The first version is to convert cubit mesh with tetra10. The second version is to convert cubit straight-element mesh.

2. examine mesh statistics, quality and correctness.

```
acdtool mesh stats mesh.ncdf
```

If the code reports Euler characteristics is not OK, the mesh has some problems. For example, sidesets are incomplete or overlap each other.

3. check and remove inverted second order tetrahedral elements.

```
acdtool mesh check mesh.ncdf  
acdtool mesh fix mesh.ncdf meshfix.ncdf
```

4. do postprocessing such as converting eigenvector to mode files, converting volume monitor files to mode files, and to do rfpst. The resulting mode files can be viewed with paraview. The first two postprocessing work can be executed in parallel.

```
acdtool postprocess eigentomode eigendirs  
acdtool postprocess volmontomode t3p.in jobname  
acdtool postprocess rf rfpst.in
```

5. another postprocessing option is for converting wakefield data obtained with T3P into the longitudinal wake potential at a certain tranverse point x y (often 0, 0). A Laplace solver is employed. This method also works in parallel.

```
acdtool postprocess wakefield wake.bnd wake.z.all.dat 0 0
```

## Download

ACDTool executables for various operating systems are available for download at:

<http://www.slac.stanford.edu/~candel/acdtool>

In order to run the newest acdtool on Fedora Linux / x86\_64, you need to install the openmpi package, and then load it in the current shell using the command "module load openmpi-x86\_64".