

As-built geometry updates

- Status of DIRC as-built geometry in HDDS
- Geometry file parser to introduce misalignment

DIRC as-built geometry status

Implemented in HDDS geometry:

- external aluminum supports in the acceptance region
- a model of bar box internal aluminum supports: cross-beams, aluminum sheets, side edges
- individual bar dimensions: data taken from SLAC spreadsheets

Individual bar alignment convention

- **x-direction: aligned at wedge exit.**
 - each glue joint has a constant thickness in x-direction. As a result, the far-end mirror side is flexible and can be slightly different for different 4.9m long-bars
- **y-direction: aligned at lower edge.**
 - motivated by how those bars were assembled, as this is the mechanically critical dimension where we wanted to minimize any stress and distortion
- **z-direction: aligned at the upstream side.**
 - such that the upstream face of all bars are at the same z

Geometry file parser

- Overview:
 - Purpose: to introduce misalignments to some nominal model of the as-built geometry
 - What it does:
 - Take a nominal geometry file
 - Apply tweaks specified in the config file
 - Output a “perturbed” geometry xml file
 - Usage: `$ python tweak_DIRC.py config.cfg`
- First version, with README: [hd_utilities/dirc/alignment](https://github.com/yunjielab/hd_utilities/dirc/alignment)

Geometry file parser

- Currently implemented:
 - tweak the angles of the 3-segment mirrors in the optical boxes
 - tweak the overall rotations of the optical box w.r.t. the bar boxes
 - tweak the overall (x,y,z) offsets of the optical box w.r.t. bar boxes.
- Trivial to add more tweak functions