

Geometry Update August 2007

Summary

- **Top screws** This has been implemented in a recent tag of xmlGeoDBs and Heather has upgraded ACD code as needed to handle both old and new-style geometries. Data collected by Luis Reyes was used to locate the screws. Since then Robert Johnson has extracted what is almost certainly better information from design drawings. Although the differences are not large, the old offsets should be replaced with Robert's numbers. [Post-meeting: replacement done in xmlGeoDBs v1r43p2]
- **Side screws** They can be handled in the same manner. Code will already handle them correctly; only xmlGeoDBs has to be updated. Joanne needs data, preferably from drawings. This will probably take a while, but side screws are of much less importance to the simulation anyway. Other items will be tackled first.
- **Side shingling** Robert and Bill agree the fake shingling (tested and ready to go, but not yet used in production jobs) is adequate for MC but not for analyzing real data; we need something better in place before the big background run, even if that entails a modest delay in the start of that run. There are two kinds of change needed for an accurate model: the tiles need to be located correctly, including the tilt of rows 1 and 2, and some tiles need to be represented by a volume with a trapezoidal face (not currently supported by our stuff) rather than a rectangle. Both changes involve significant work for Joanne and for Eric C. Positioning the tiles correctly is more critical. If we continue to model them with boxes the gaps at the edges where sides come together will be too large, but not by an intolerable amount and the error will be in the right direction (simulated model will have worse performance than the real thing). Hence the plan is to try to get just this change in for the big background run; that is, end of this month or early in September.

See Robert's Collaboration Meeting talk for more information on these issues.

Joanne's Notes from the August 1, 2007 Meeting

Screws

1. Top screw positions should be adjusted to use design information Robert presented rather than Luis Reyes' measurements. The differences are not large, but we might as well use the best information.
2. We might want to adjust the size of the hole as simulated to account for lessened efficiency around the actual hole. [Current value for hole diameter in the model is 3.2 mm; diameter of screw is 2.8 mm]. If so, someone will need to do some analysis to determine a reasonable value, then pass it on to me.
3. Putting side screws into the model is not as high priority as the other items. It will take some effort to obtain realistic offsets from drawings.

Side shingling

The fake shingling (tested and ready to go, but not yet used in production jobs) is adequate for MC but not for analyzing real data; substantial lead time is required for analysis using the new geometry to be checked out and optimized. We need to have something more realistic in place in time for the big background run coming up, even if it causes a modest (~week) delay.

In the true geometry side tiles in rows 1 and 2 are tilted and, to lessen gaps at the edges where side faces come together, some of them are trapezoids (in dimensions perp. to thickness). Both the tilting and the non-standard shape present problems for various layers of software, impacting Eric C. and me.

For analysis it is most important to get the tilting in, so that tile positions are realistic. If the tilted tiles are all boxes with orthogonal faces there will be larger-than-actual gaps but the effect will not be large in relative terms and will be in the right direction (making simulated instrument worse than the real one).

Hence the plan is to start with the tilting with the expectation that it, at least, should be ready in time for the big background run.

And also this note from Richard:

"You might mention that Robert is, I think, investigating the ribbons' efficiency mismatch between MC and data."