Geometry re-alignment

Somewhere at the end of the data processing we found that geometry of cspad is not well tuned; peaks on the right- and left-hand side of the image are not symmetric. Geometry file which we used so far came from cpo; it was processed by goptimizer and converted back to "psana" format. Then there is a rumor that current version of goptimizer has a bug which gives 2x1 segment offset of a few pixels.

Input geometry and data

Use optical measurements from 2015-01-20

```
Archive:
/reg/g/psdm/detector/alignment/cspad/calib-cxi-camera2-2015-01-20/

Start tuning using geometry file:
calib/CsPad::CalibV1/CxiDs2.0:Cspad.0/geometry/geo-cxif5315-r0169-swap-tuned.data

Work files in:
/reg/g/psdm/detector/alignment/cspad/calib-cxi-camera2-2015-01-20/2015-11-06-cxif5315-geo-tuning/
```

Datasets

- exp=cxif5315:run=169 - 85188 events - data pikes and ceramic rings
- exp=cxif5315:run=93 - 45329 events - lysozime

n-d arrays of maximal intensities

- nda-max-cxif5315-r0093-45329ev-lysozime.txt
- nda-max-cxif5315-r0169-85188ev-data.txt

Re-tuning geometry

Geometry was re-tuned using application `geo`, final file in archive is

- geo-cxif5315-r0169-2015-11-06-tuned.data

Images

lysozime, data peaks, data ceramic rings

lysozime with old geometry file `geo-cxif5315-r0169-swap-tuned.data`

Conclusion

Images show that current geometry is truly tuned with precision approx. 1 pixel.