CAF dataset for Allen Reference Atlas:

1. Fetch `AtlasAnnotation25.sva` sparse volume file from ABA Website.
2. Coordinates in this volume are expressed in Mouse_ABAvoxel_1.0 (`ABAvoxel, INCF:0100`) SRS, in which units of measurements are voxels. In order to express coordinates in stereotaxic coordinates (with bregma point defined as origin of the coordinate system), the volume has to be transformed into Mouse_ABAreference_1.0 SRS (`ABAreference, INCF:0101`).

3. Such transfomration is given by the TransfomPOI INCF DAI service (ie. this request).

4. Tranformation may be calculated from 4 points in `ABAvoxel` SRS (`p1, p2, p3, p4`) and 4 corresponding point in `ABAreference` SRS (`p1', p2', p3', p4'`) by solving following equation:

After all, matrix **M** is:

```
M=
[[  2.71693750e-02  -8.17542750e-05  -5.01197500e-04  -1.25701700e+00]
 [  8.92628250e-04   2.82020000e-02  -2.71143000e-04  -1.28628500e+00]
 [ -5.86774750e-04  -8.96920500e-04  -2.59281250e-02   6.04778000e+00]
 [  0.00000000e+00   1.73472348e-18   0.00000000e+00   1.00000000e+00]]
```

and **M'**:

```
M'=
[[  1.00000000e+00  -2.89888217e-03  -1.93302640e-02  -1.25701700e+00]
 [  3.28542063e-02   1.00000000e+00  -1.04574858e-02  -1.28628500e+00]
 [ -2.15969175e-02  -3.18034359e-02  -1.00000000e+00   6.04778000e+00]
 [  0.00000000e+00   6.15106544e-17   0.00000000e+00   1.00000000e+00]]
```

Then, initial volume `AtlasAnnotation25.sva` is transformed using **M'** and the resulting volume is used by the 3dBAR parser to create CAF dataset.

Below you may find comparison of brain outlines created using raw volume and volume after transformation: