ＥＢＳＤデータをＭＴＥＸで解析し極点図を得る

２０２２年０６月２２日

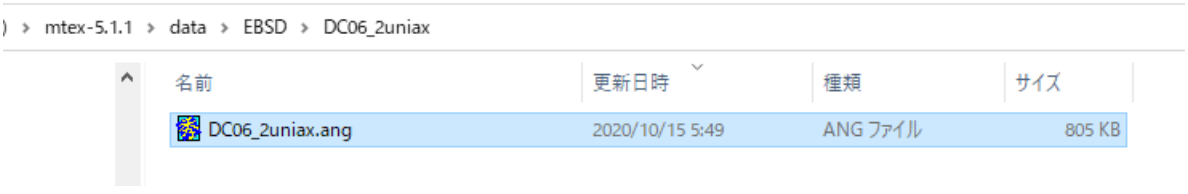
HelperTex Office

概要

ＥＢＳＤデータから極点図を作成する場面は頻繁に発生している。

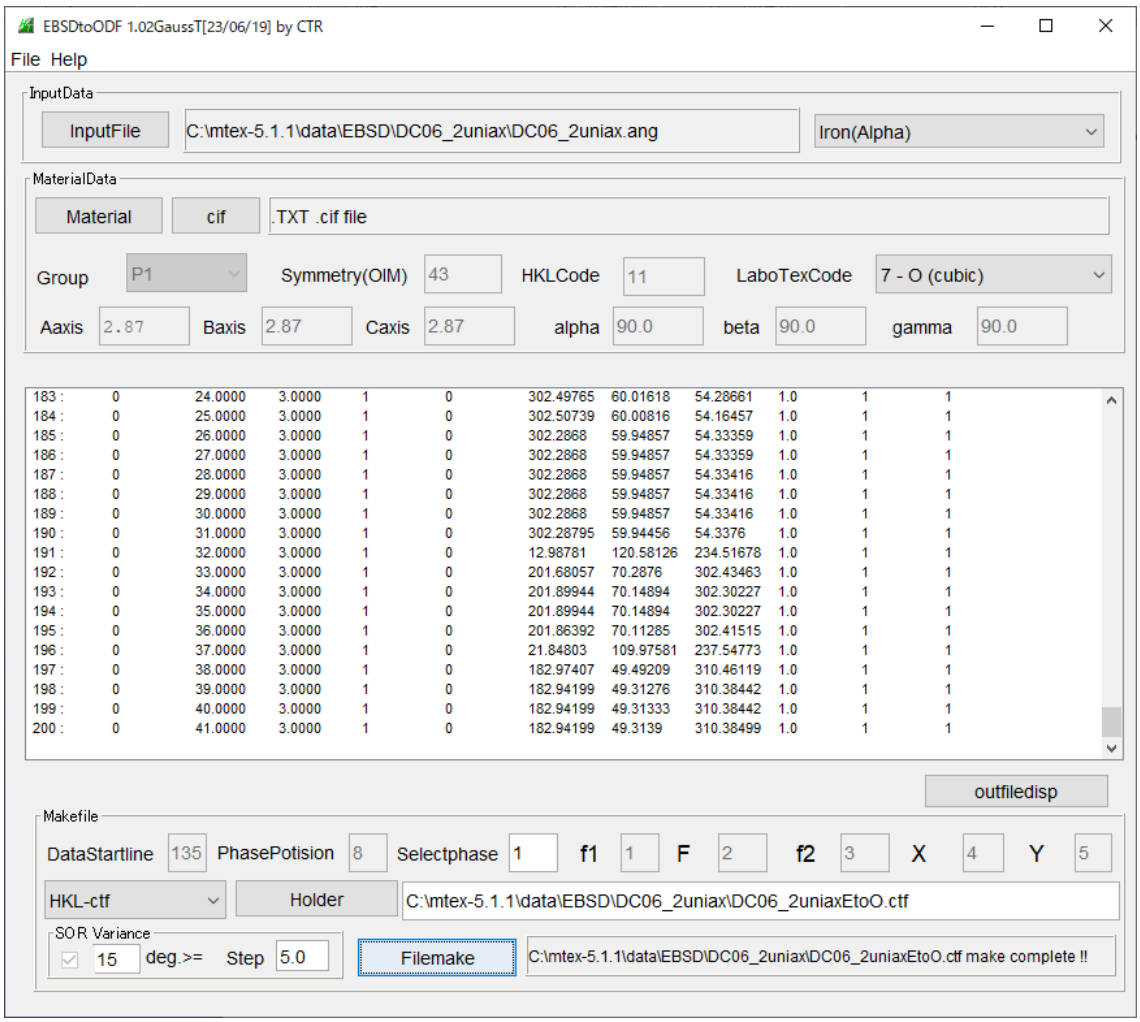
今回、テンプレートを作成しておく

対象ＥＢＳＤデータ




```
# TEM_PIXperUM          1.000000↓
# x-star                0.521621↓
# y-star                0.845559↓
# z-star                0.690009↓
# WorkingDistance       14.000000↓
#↓
# Phase 1↓
# MaterialName          Iron (Alpha)↓
# Formula       Fe↓
# Info          ↓
# Symmetry              43↓
# LatticeConstants      2.870 2.870 2.870  90.000  90.000  90.000↓
# NumberFamilies        100↓
# hklFamilies            0 -1  1 1 5.936393 1↓
# hklFamilies            0 -2  0 1 4.228070 1↓
# hklFamilies            1 -2 -1 1 3.376662 1↓
# hklFamilies            0 -2  2 0 2.829595 0↓
# hklFamilies            0 -3  1 1 2.438777 1↓
```

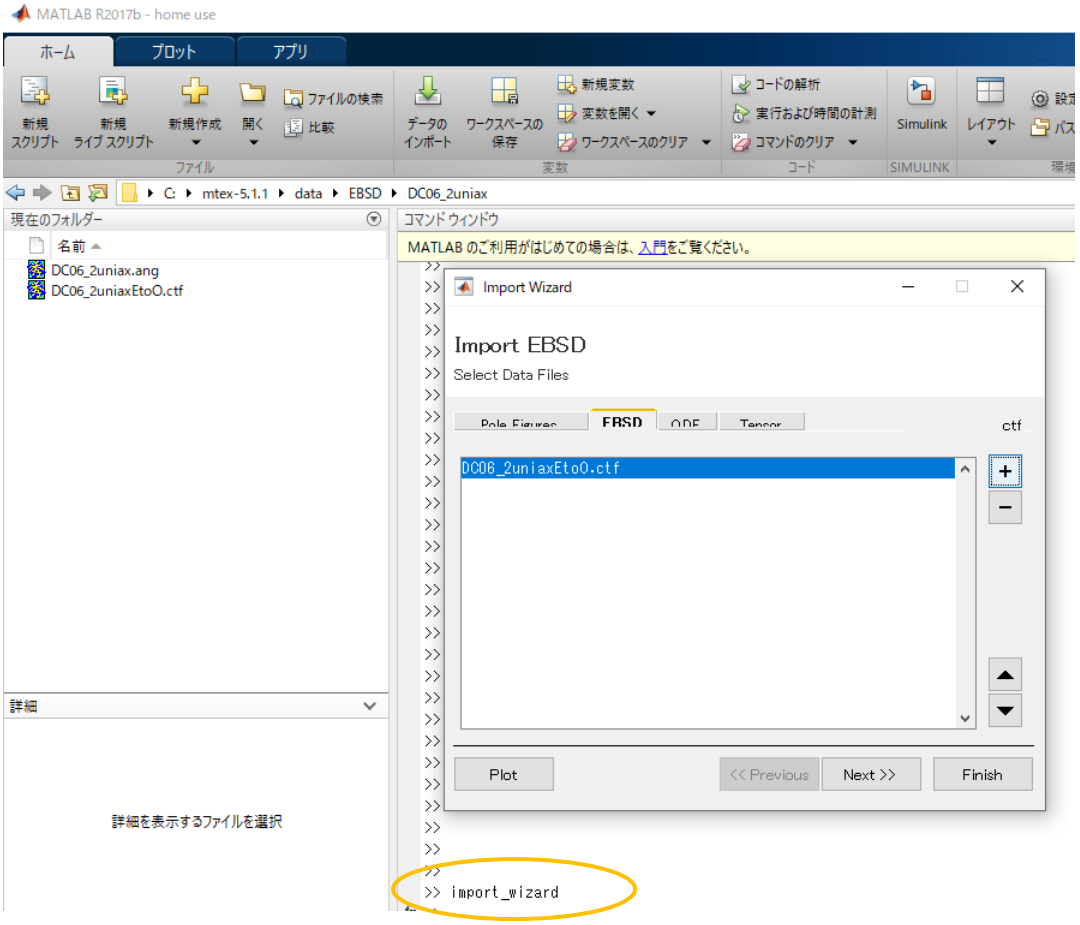
Ａｎｇデータをｃｔｆファイルに変換

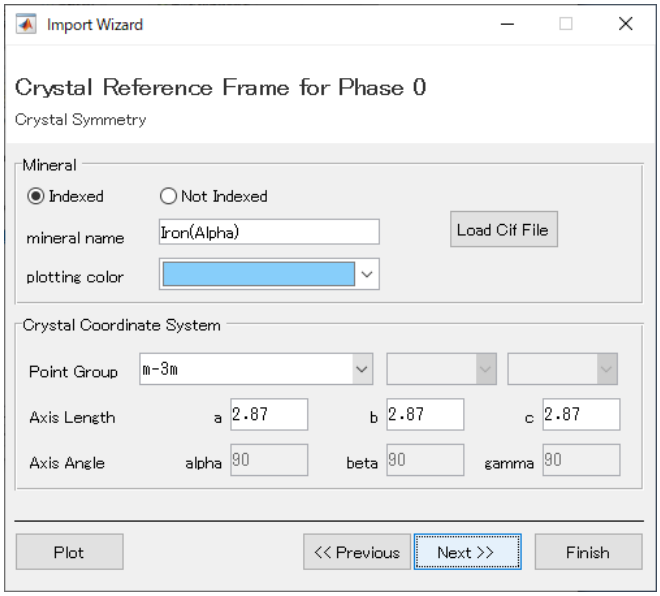


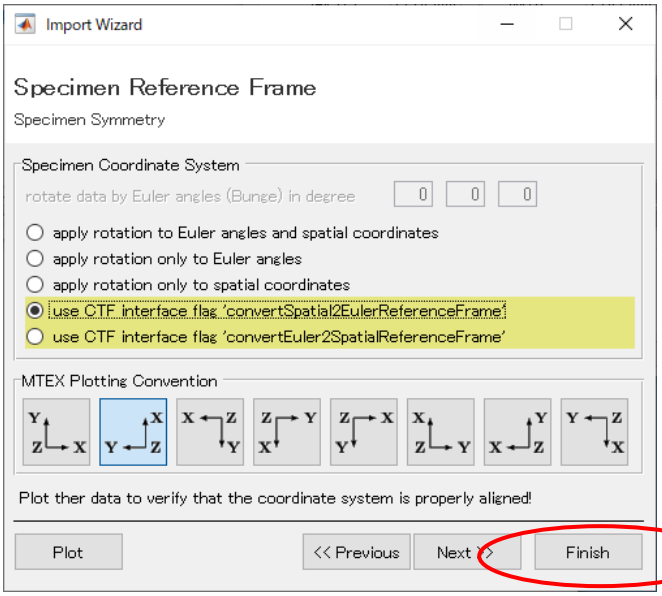
ａｎｇデータを直接ＭＴＥＸで読み込む場合、以下を参考にしてください。

https://helpertex.sakura.ne.jp/Soft/DOC3-MTEX/MTEX570-Angdataread.pdf

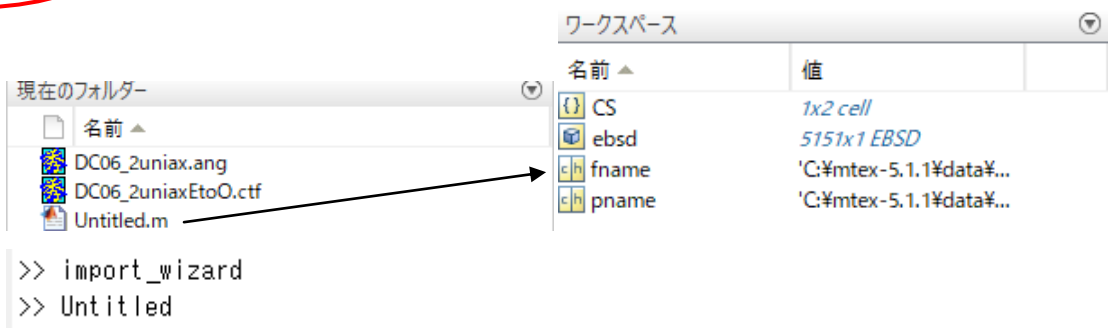
ＭＴＥＸに読み込む







実行で



```
CS = {...
  'notIndexed',...
  crystalSymmetry('m-3m', [2.9 2.9 2.9], 'mineral','Iron(Alpha)',
```

‘Ｉｒｏｎ（Ａｌｐｈａ)’の抽出

```
>> ans=ebsd('Iron(Alpha)')
```

ＯＤＦ計算

```
>> odf=calcDensity(ans.orientations)          // FWHM=25deg
```

FWHM=10deg に変更は

Odf=CalcDensity(ans.orientations,”halfwidth’,10.0degree)

Ｉｒｏｎ（Ａｌｐｈａ）のｃｓを計算

```
>> cs=ans.orientations.CS
```

極点図指定

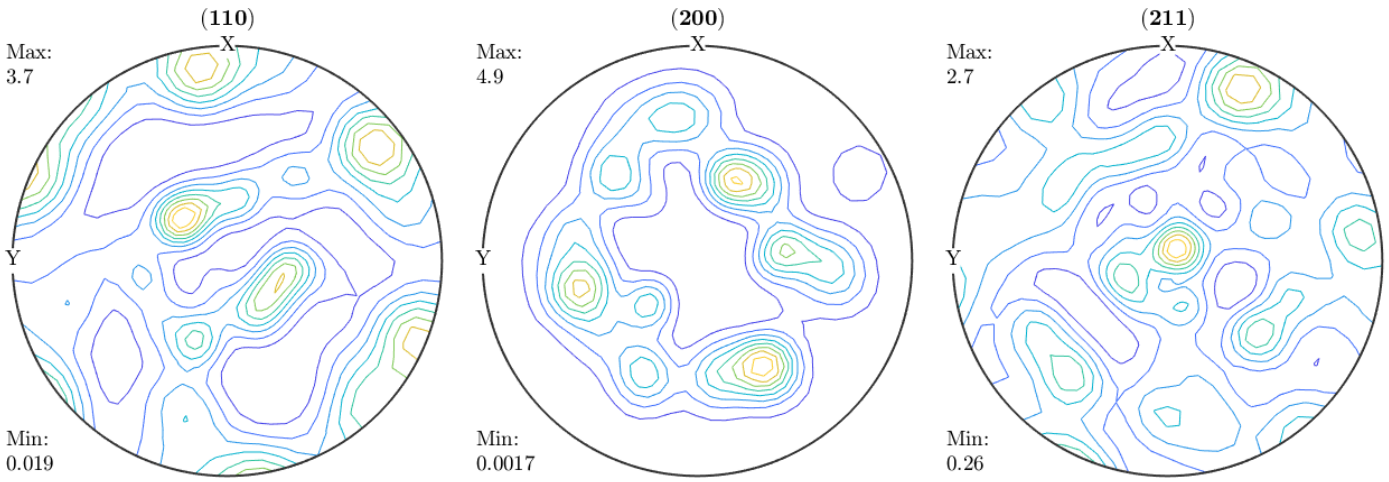
```
>> h = {Miller(1,1,0,cs),Miller(2,0,0,cs),Miller(2,1,1,cs)}
```

極点図作成

```
>> rpf=calcPoleFigure(odf,h)
```

極点図表示

```
>> plot(rpf,'contour','projection','eangle')
```

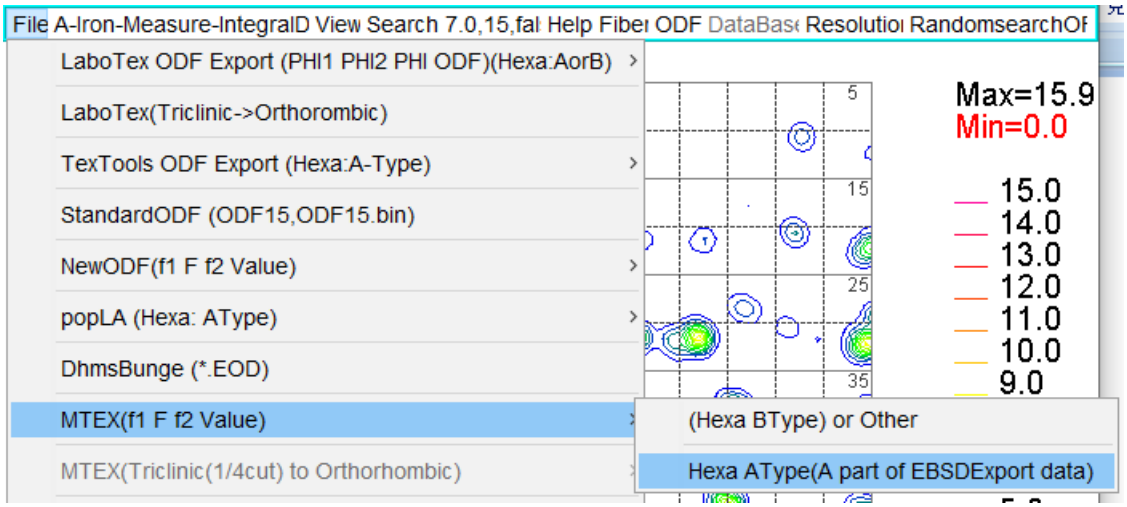


対称操作（Ｔｒｉｃｌｉｎｉｃ－>Ｏｒｔｈｏｒｈｏｍｂｉｃ）

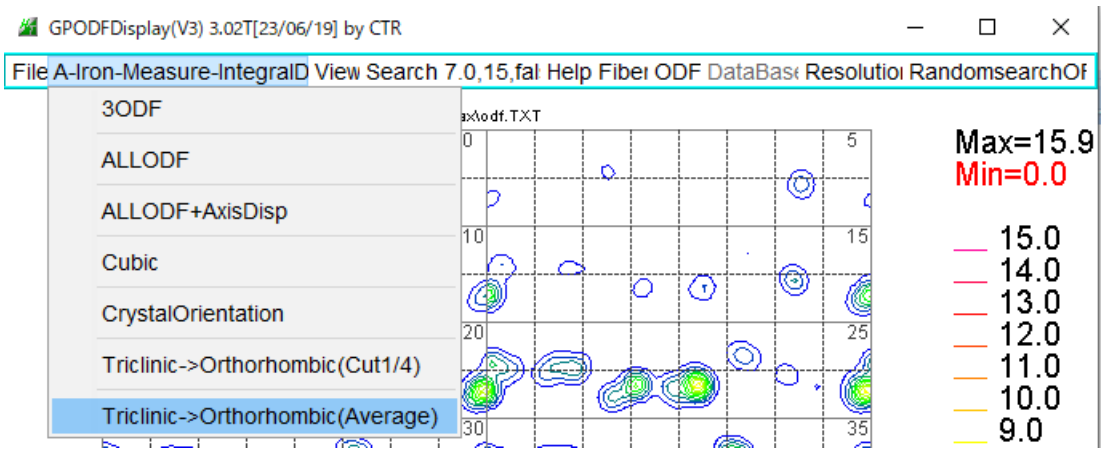
Ｅｘｐｏｒｔし、Ｏｒｔｈｏｒｍｏｂｉｃ化

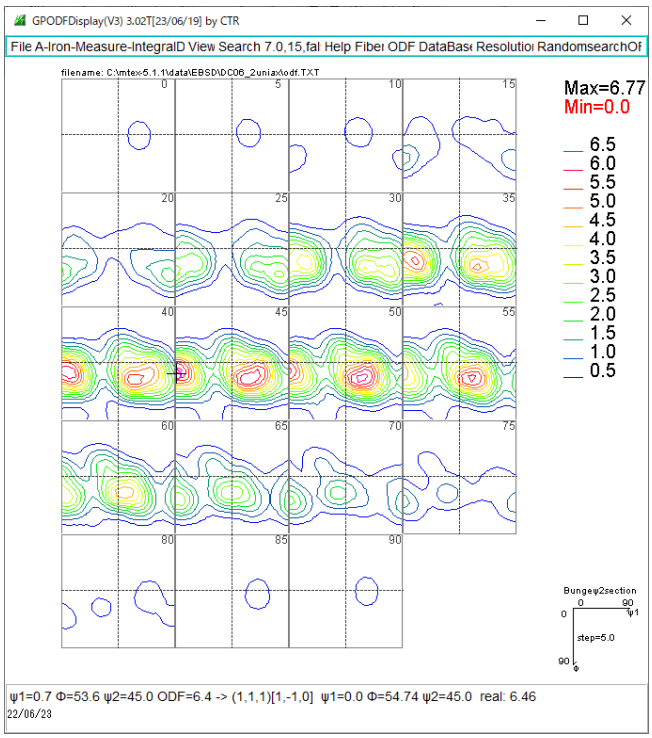
>> export(odf,'odf.TXT')

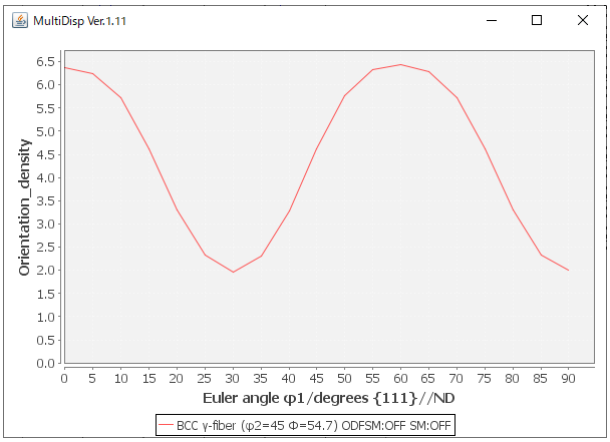
データ読み込み



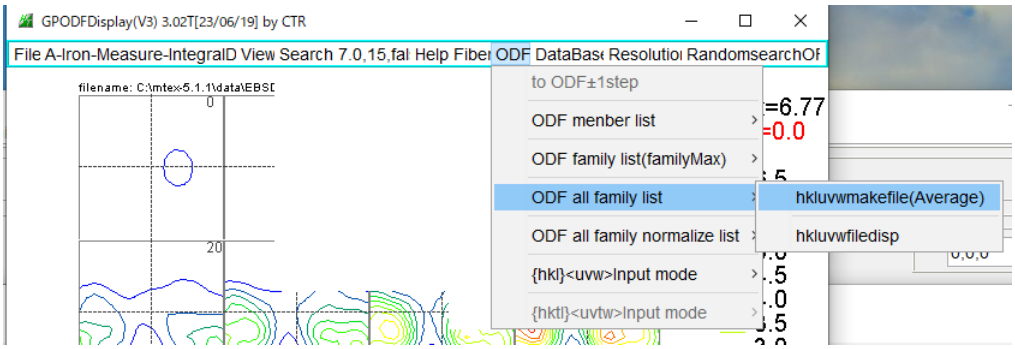
Ｔｒｉｃｌｉｎｉｃ－>Ｏｒｔｈｏｒｈｏｍｂｉｃ

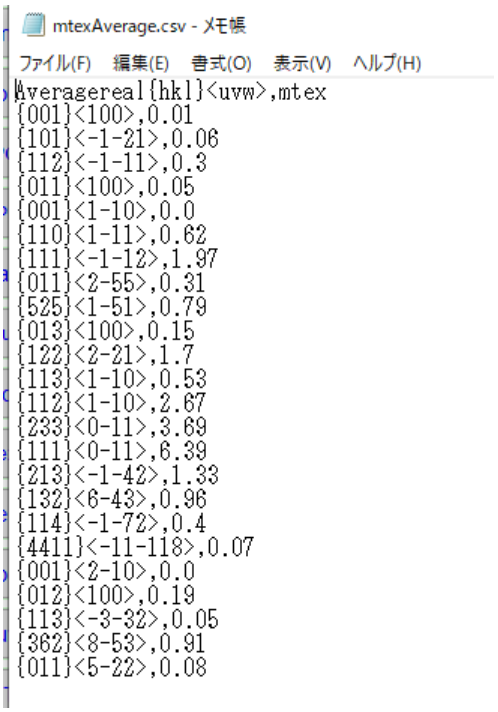






方位計算


GPODFDisplay(V3) 3.02T[23/06/19] by CTR
File A-Iron-Measure-IntegralD View Search 7.0,15,fal Help Fiber ODF DataBas Resolutio Randomsearch
filename: C:\mtex-5.1.1\data\EBSD
to ODF±1step
ODF menber list
ODF family list(familyMax)
ODF all family list
ODF all family normalize list
{hkl}<uvw>Input mode
{hktl}<uvtw>Input mode
hkluvwmakefile(Average)
hkluvwfiledisp


mtexAverage.csv - メモ帳
ファイル(F) 編集(E) 書式(O) 表示(V) ヘルプ(H)
Averagereal{hkl}<uvw>,mtex
{001}<100>,0.01
{101}<-1-21>,0.06
{112}<-1-11>,0.3
{011}<100>,0.05
{001}<1-10>,0.0
{110}<1-11>,0.62
{111}<-1-12>,1.97
{011}<2-55>,0.31
{525}<1-51>,0.79
{013}<100>,0.15
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{113}<1-10>,0.53
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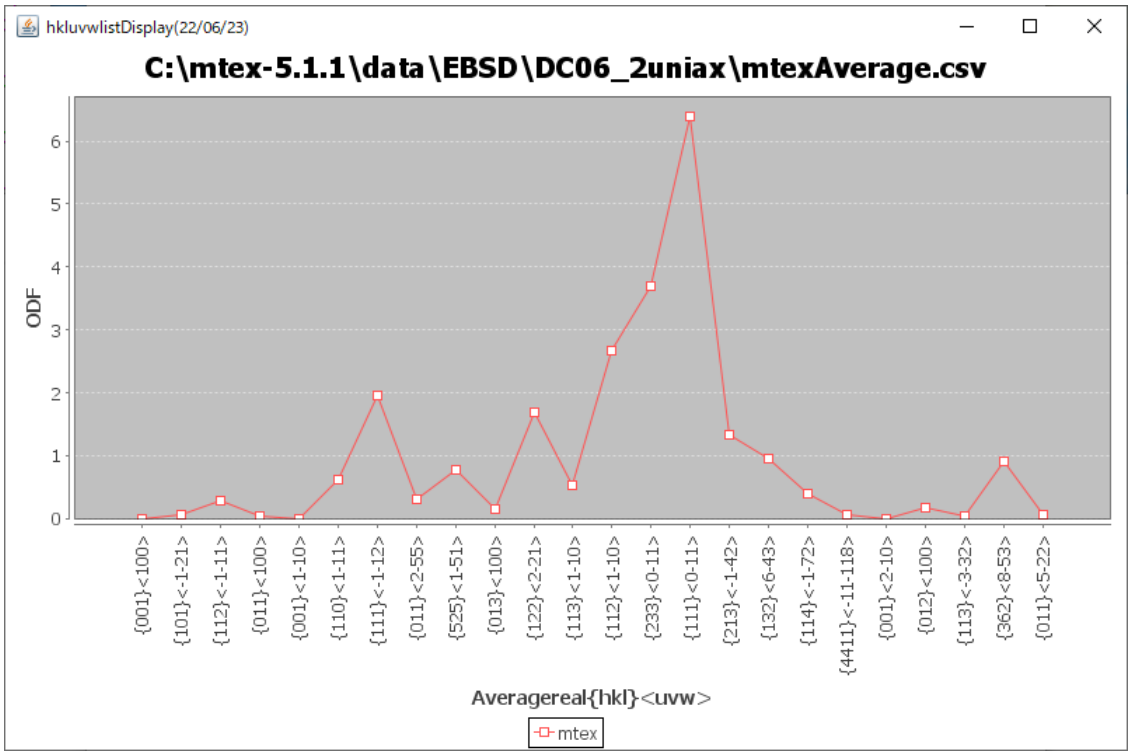
{233}<0-11>,3.69
{111}<0-11>,6.39
{213}<-1-42>,1.33
{132}<6-43>,0.96
{114}<-1-72>,0.4
{4411}<-11-118>,0.07
{001}<2-10>,0.0
{012}<100>,0.19
{113}<-3-32>,0.05
{362}<8-53>,0.91
{011}<5-22>,0.08


hkluvwlistDisplay(22/06/23)
C:\mtex-5.1.1\data\EBSD\DC06_2uniax\mtexAverage.csv
ODF
0
1
2
3
4
5
6
{001}<100>
{101}<-1-21>
{112}<-1-11>
{011}<100>
{001}<1-10>
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{011}<2-55>
{525}<1-51>
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{122}<2-21>
{113}<1-10>
{112}<1-10>
{233}<0-11>
{111}<0-11>
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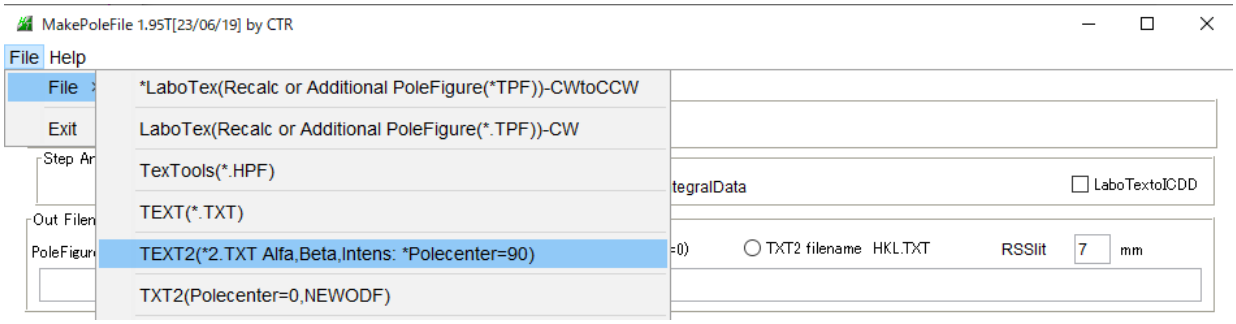
{132}<6-43>
{114}<-1-72>
{4411}<-11-118>
{001}<2-10>
{012}<100>
{113}<-3-32>
{362}<8-53>
{011}<5-22>
Averagereal{hkl}<uvw>
mtex

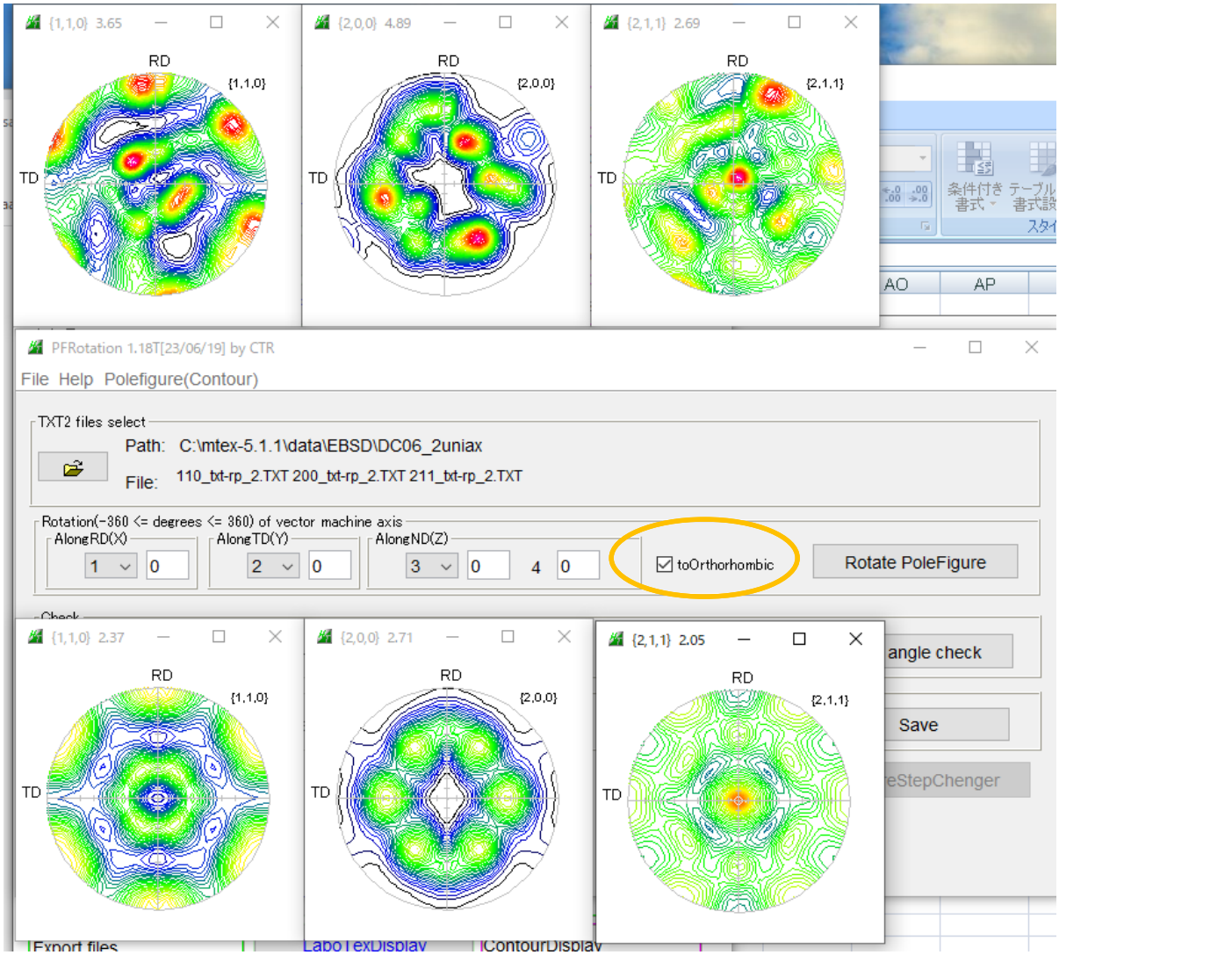
極点図

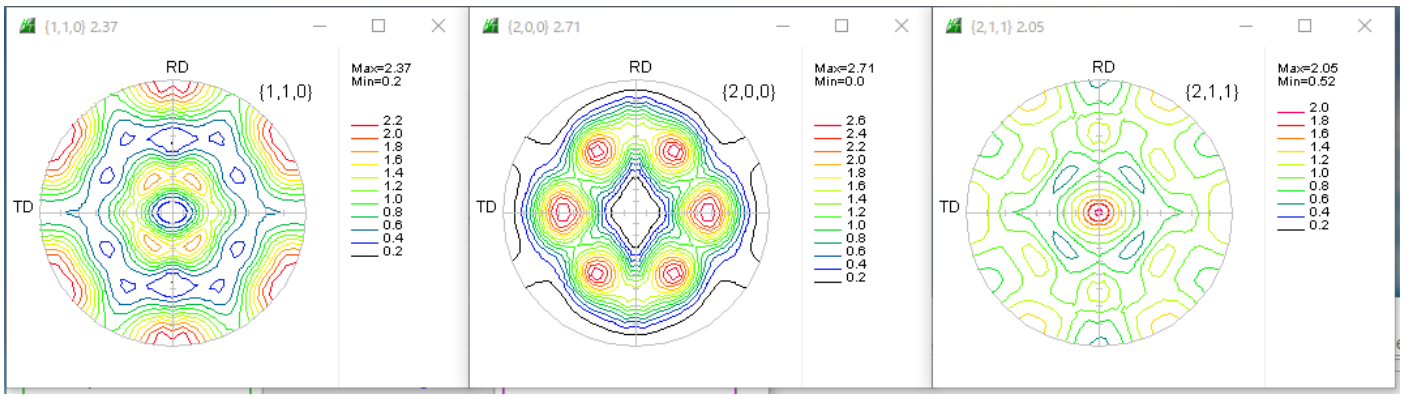
>> export(rpf,'pole')

MTEX->TXT2

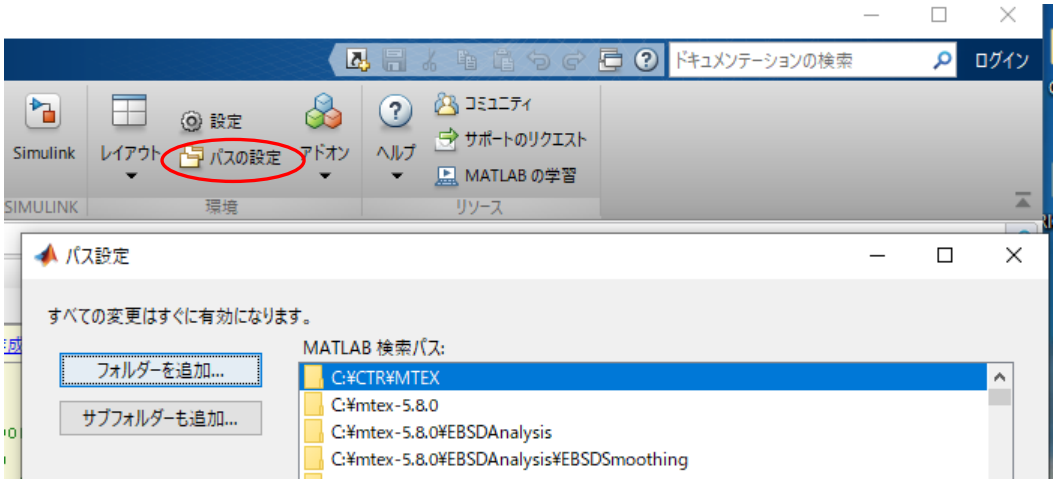


ＰＦＲｏｔａｔｉｏｎ(TXT2 を表示)でＯｒｔｈｏｒｈｏｍｂｉｃ化





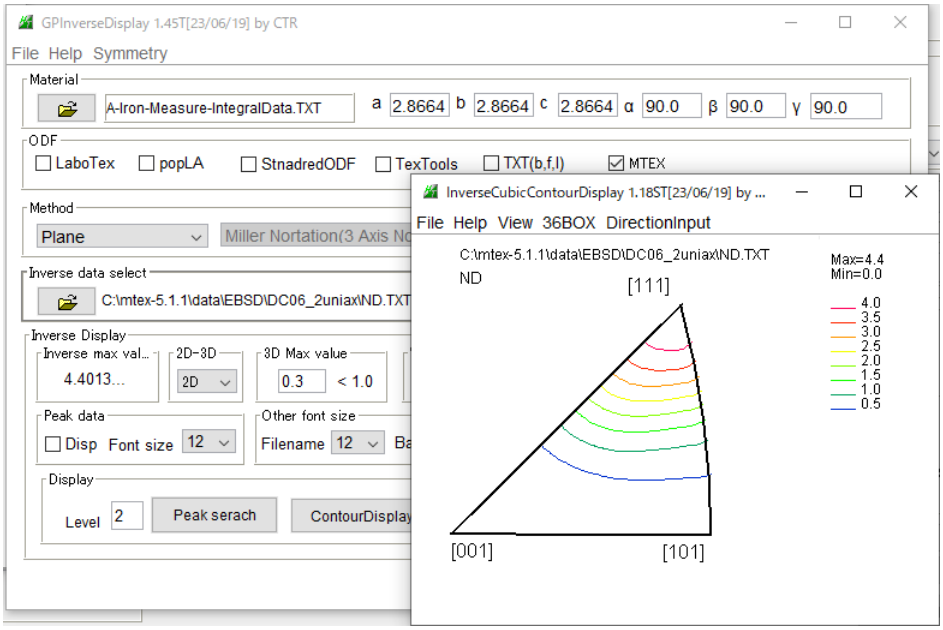
ＭＡＴＬＡＢのパスに CTR¥MTEX を設定で逆極点図Ｅｘｐｏｒｔ可能



>> exportIPDF(odf,xvector,'RD.TXT')

>> exportIPDF(odf,yvector,'TD.TXT')

>> exportIPDF(odf,zvector,'ND.TXT')



３６Ｂｏｘから計算