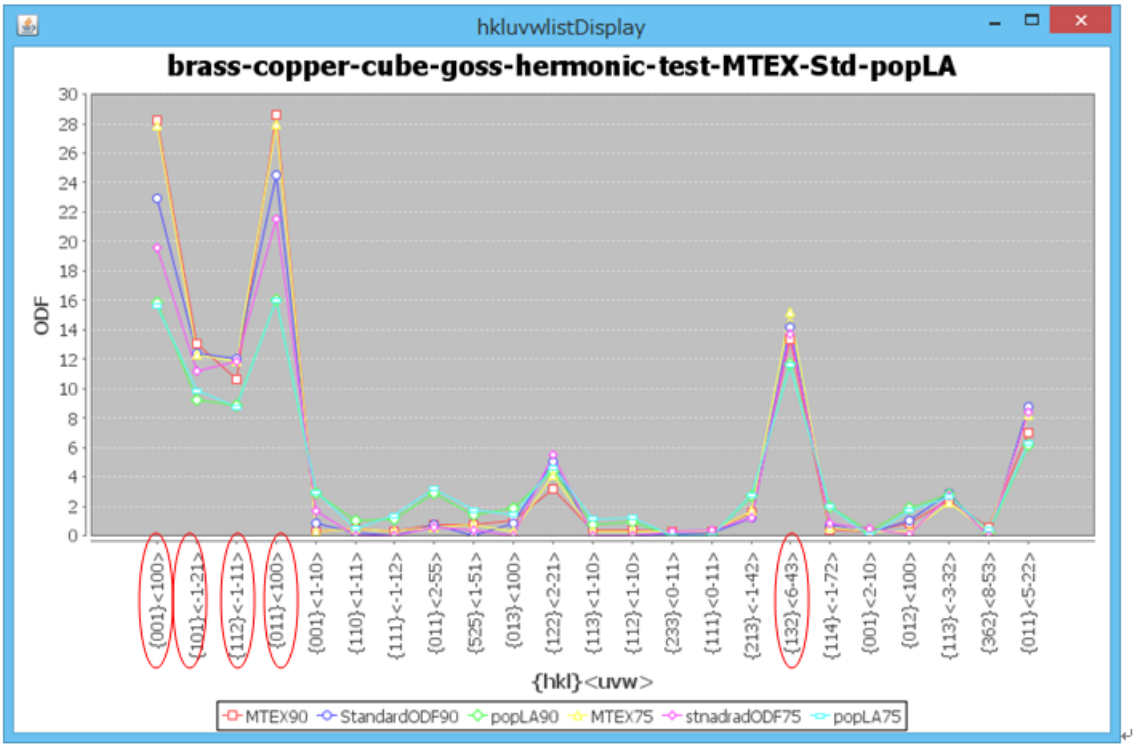
MTEX,StandardODF,popLAHermonic による

ＯＤＦＨｅｒｍｏｎｉｃテスト



ＭＴＥＸは Hermonic に近い値

２０１９年０２月０３日

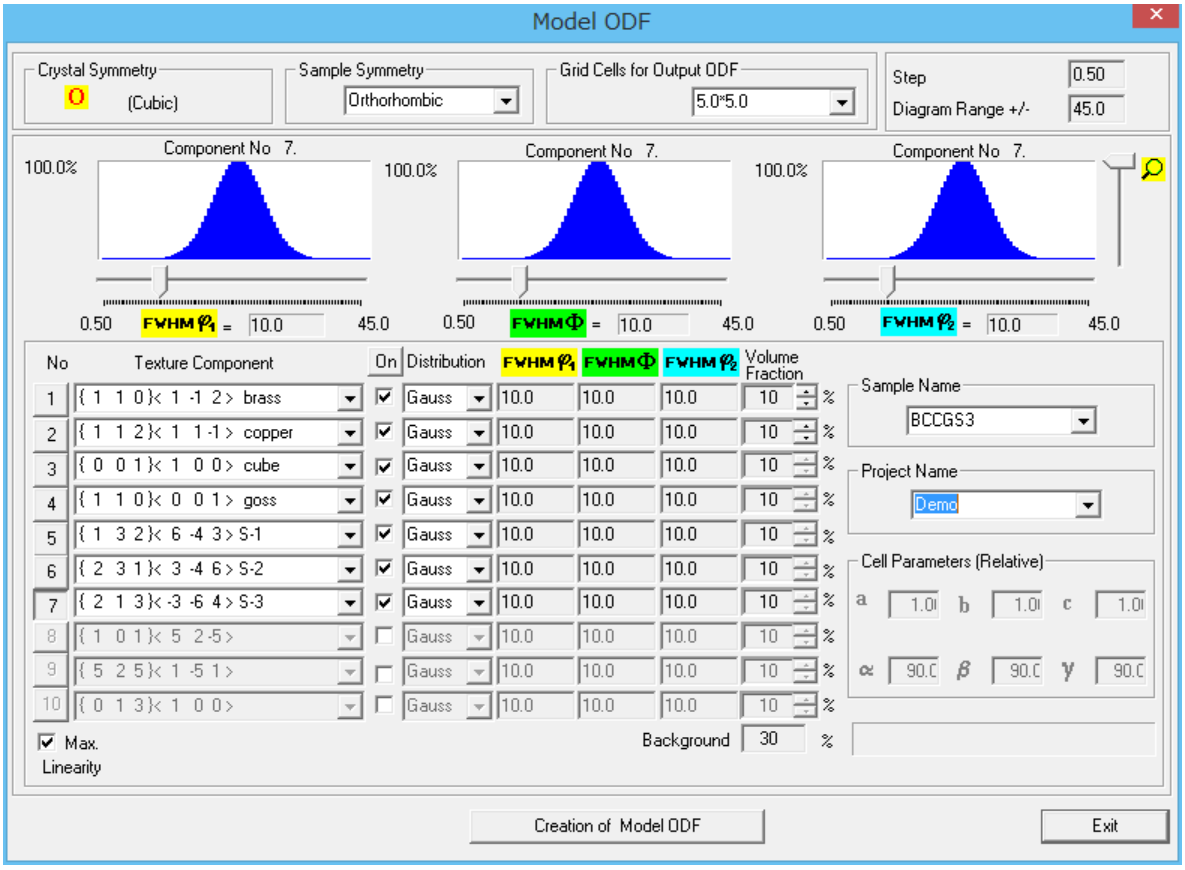
ＨｅｌｐｅｒＴｅｘ　Ｏｆｆｉｃｅ

概要

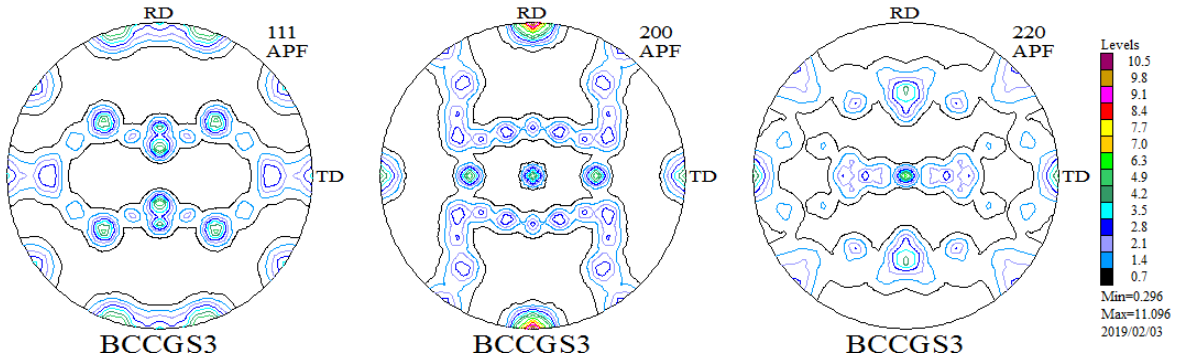
ＭＴＥＸはＨｅｒｍｏｎｉｃＯＤＦであるか他のＨｅｒｍｏｎｉｃＯＤＦと解析結果をの比較を行う

入力データ

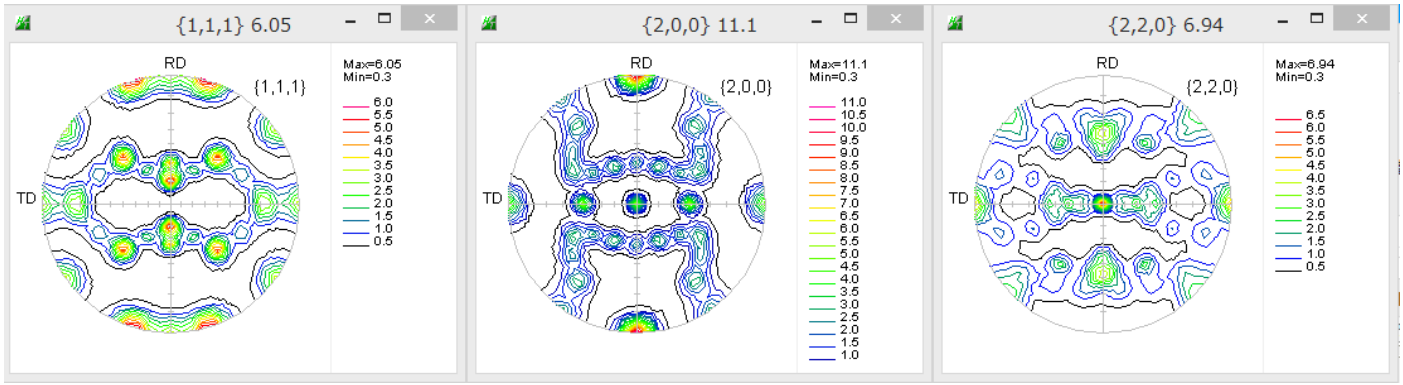
ＬａｂｏＴｅｘにより、Ｂｒａｓｓ，Ｃｕｂｅ，Ｃｏｐｐｅｒ，Ｇｏｓｓ，Ｓ方位を作成し、



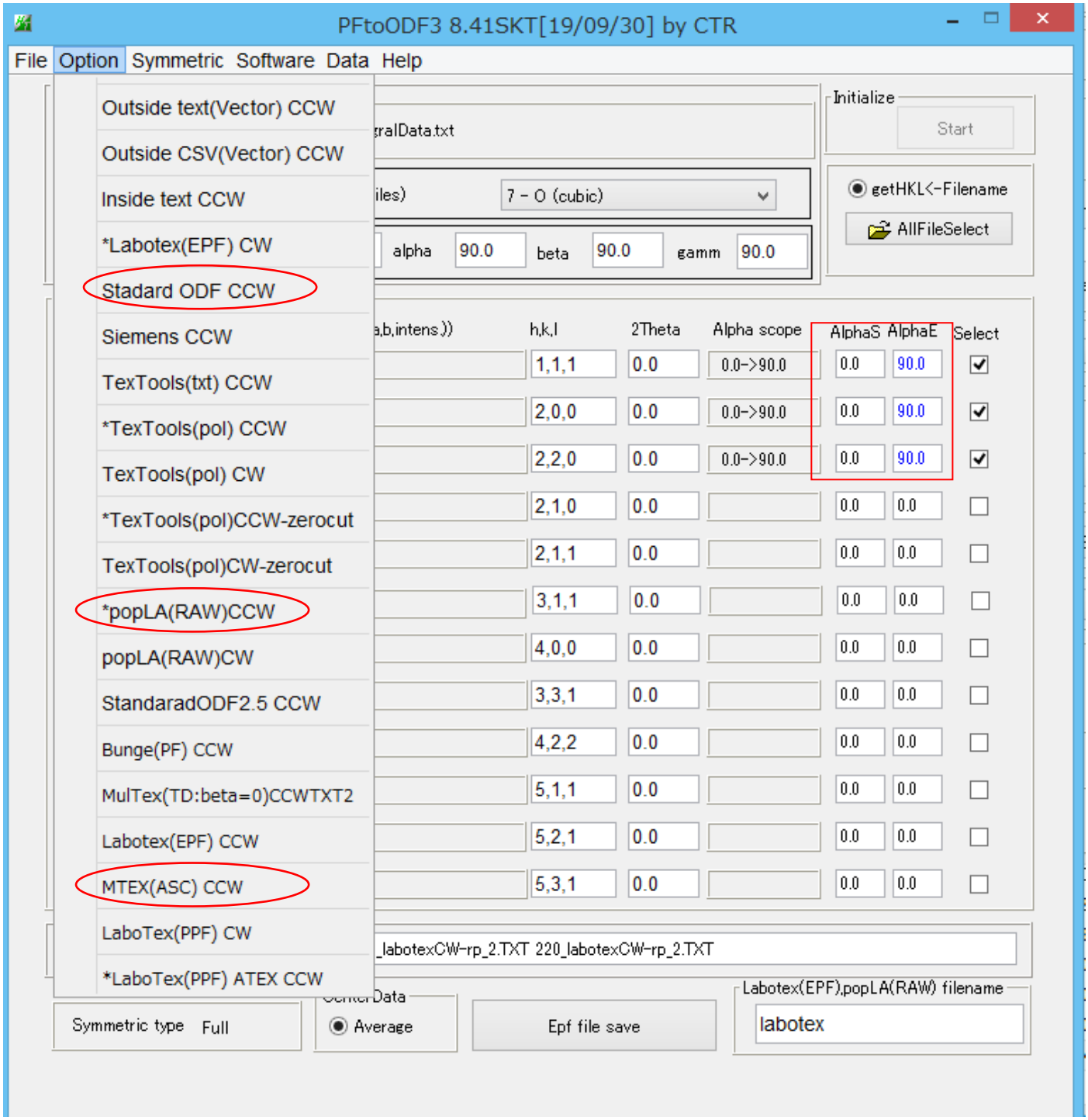
極点図を作成



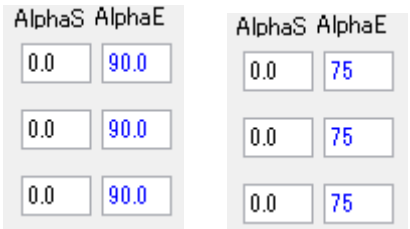
極点図をＥＸｐｏｒｔし



各ＯＤＦ向けデータを作成

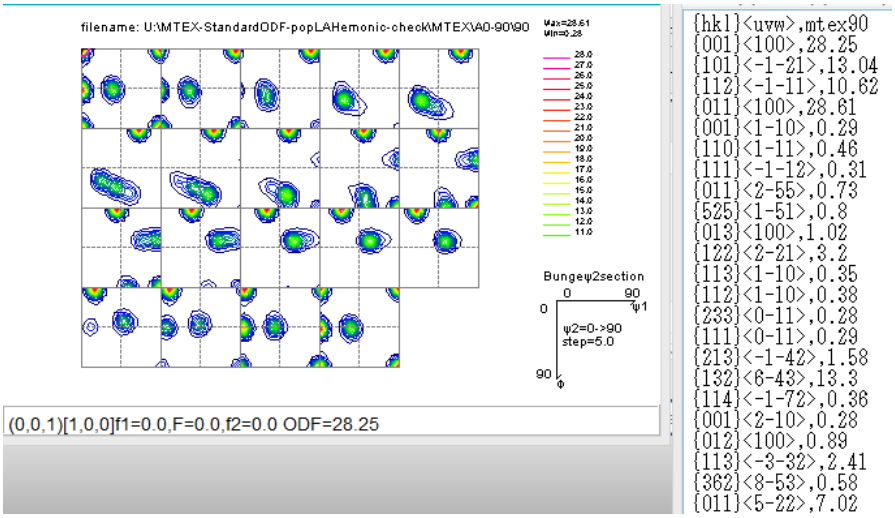


α範囲は０－＞９０度と０－＞７５度のＯＤＦ解析結果からｈｋｌｕｖｗプロファイルを比較する



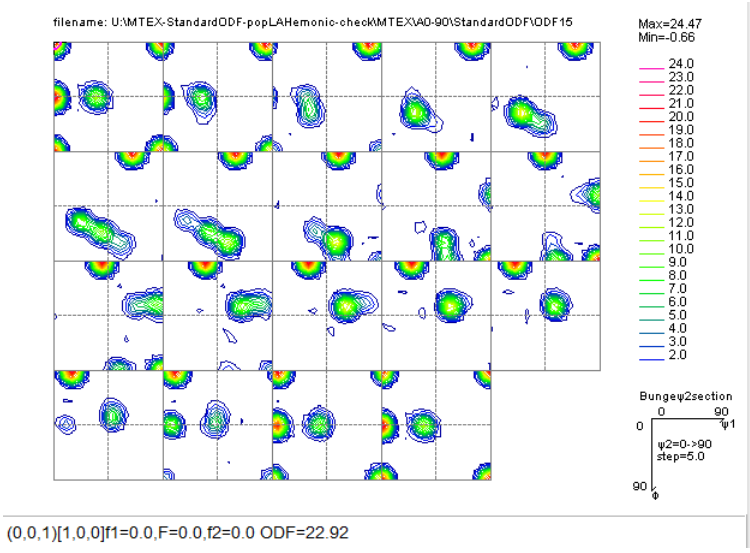
α軸０－＞９０の場合

MTEX



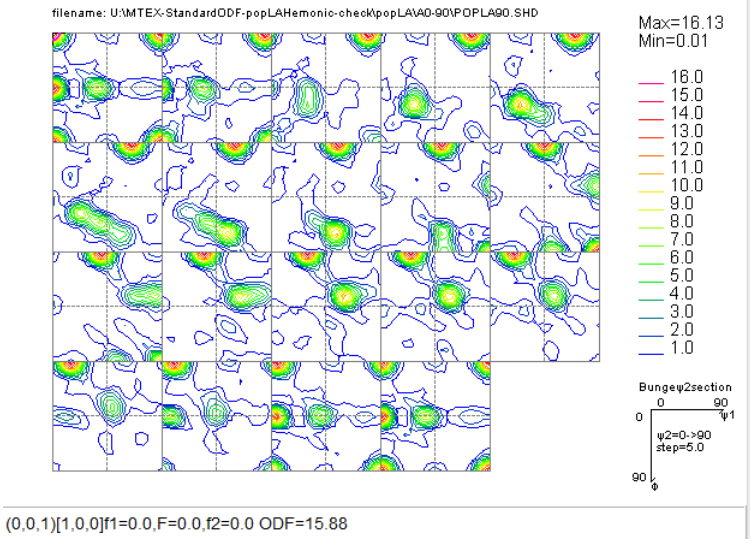
{hkl}<uvw>,mtex90
{001}<100>,28.25
{101}<-1-21>,13.04
{112}<-1-11>,10.62
{011}<100>,28.61
{001}<1-10>,0.29
{110}<1-11>,0.46
{111}<-1-12>,0.31
{011}<2-55>,0.73
{525}<1-51>,0.8
{013}<100>,1.02
{122}<2-21>,3.2
{113}<1-10>,0.35
{112}<1-10>,0.38
{233}<0-11>,0.28
{111}<0-11>,0.29
{213}<-1-42>,1.58
{132}<6-43>,13.3
{114}<-1-72>,0.36
{001}<2-10>,0.28
{012}<100>,0.89
{113}<-3-32>,2.41
{362}<8-53>,0.58
{011}<5-22>,7.02

StandardODF



{hkl}<uvw>,standardodf90
{001}<100>,22.92
{101}<-1-21>,12.43
{112}<-1-11>,12.06
{011}<100>,24.47
{001}<1-10>,0.88
{110}<1-11>,0.2
{111}<-1-12>,0.04
{011}<2-55>,0.72
{525}<1-51>,0.0
{013}<100>,0.83
{122}<2-21>,5.0
{113}<1-10>,0.0
{112}<1-10>,0.0
{233}<0-11>,0.11
{111}<0-11>,0.22
{213}<-1-42>,1.25
{132}<6-43>,14.16
{114}<-1-72>,0.79
{001}<2-10>,0.23
{012}<100>,1.02
{113}<-3-32>,2.91
{362}<8-53>,0.03
{011}<5-22>,8.73

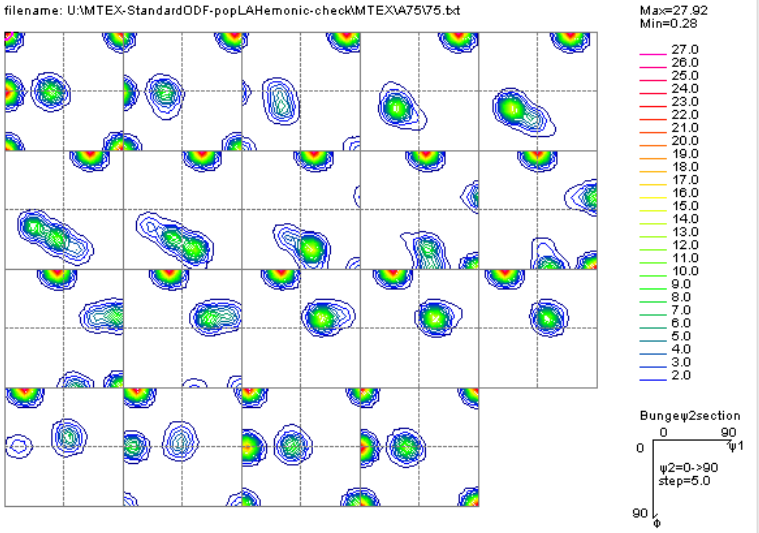
popLAHermonic



{hkl}<uvw>,popla90
{001}<100>,15.88
{101}<-1-21>,9.21
{112}<-1-11>,8.84
{011}<100>,16.03
{001}<1-10>,2.94
{110}<1-11>,1.02
{111}<-1-12>,1.1
{011}<2-55>,2.91
{525}<1-51>,1.44
{013}<100>,1.83
{122}<2-21>,4.41
{113}<1-10>,0.71
{112}<1-10>,0.9
{233}<0-11>,0.01
{111}<0-11>,0.03
{213}<-1-42>,2.72
{132}<6-43>,11.69
{114}<-1-72>,1.98
{001}<2-10>,0.3
{012}<100>,1.84
{113}<-3-32>,2.79
{362}<8-53>,0.23
{011}<5-22>,6.14

α軸0—>75

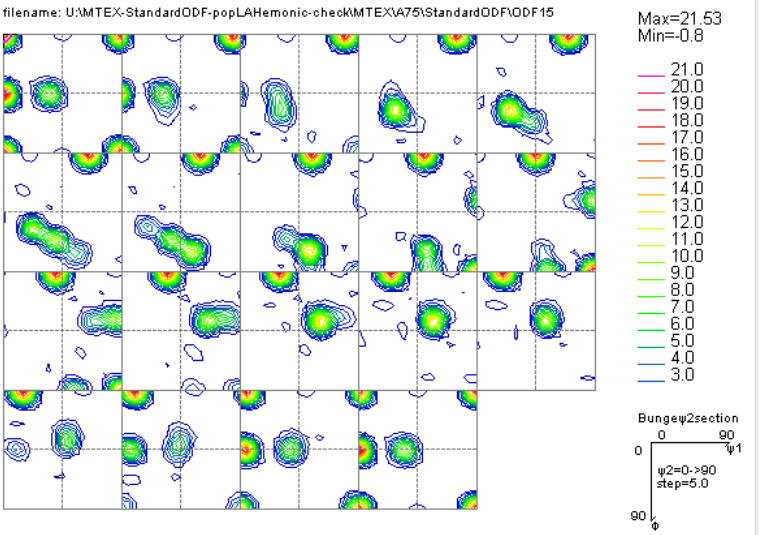
MTEX



{hkl}<uvw>,mtexZ
{001}<100>,27.86
{101}<-1-21>,12.35
{112}<-1-11>,11.86
{011}<100>,27.92
{001}<1-10>,0.29
{110}<1-11>,0.52
{111}<-1-12>,0.3
{011}<2-55>,0.59
{525}<1-51>,0.79
{013}<100>,0.31
{122}<2-21>,4.07
{113}<1-10>,0.33
{112}<1-10>,0.3
{233}<0-11>,0.28
{111}<0-11>,0.28
{213}<-1-42>,1.71
{132}<6-43>,15.2
{114}<-1-72>,0.55
{001}<2-10>,0.3
{012}<100>,0.29
{113}<-3-32>,2.28
{362}<8-53>,0.33
{011}<5-22>,8.21

(0,0,1)[1,0,0]f1=0.0,F=0.0,f2=0.0 ODF=27.86

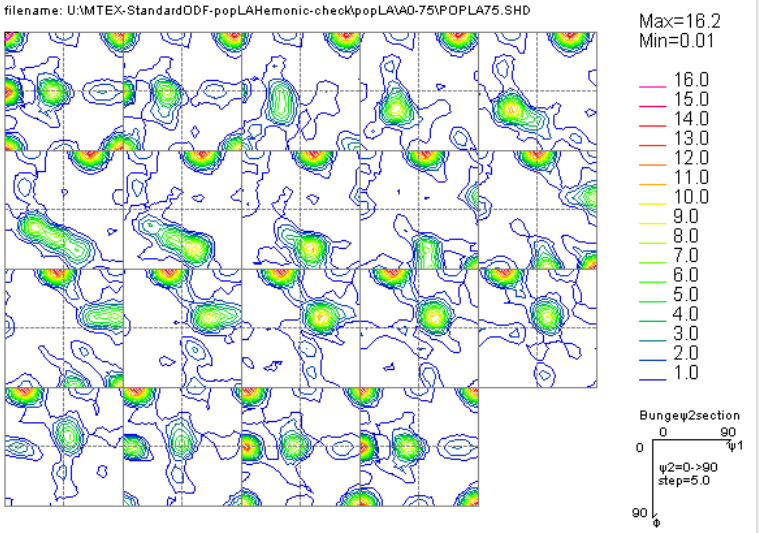
StandardODF



{hkl}<uvw>,standardodf
{001}<100>,19.55
{101}<-1-21>,11.18
{112}<-1-11>,11.81
{011}<100>,21.53
{001}<1-10>,1.67
{110}<1-11>,0.0
{111}<-1-12>,0.0
{011}<2-55>,0.53
{525}<1-51>,0.36
{013}<100>,0.0
{122}<2-21>,5.54
{113}<1-10>,0.0
{112}<1-10>,0.0
{233}<0-11>,0.28
{111}<0-11>,0.39
{213}<-1-42>,1.18
{132}<6-43>,13.67
{114}<-1-72>,0.88
{001}<2-10>,0.51
{012}<100>,0.11
{113}<-3-32>,2.67
{362}<8-53>,0.01
{011}<5-22>,8.4

(0,0,1)[1,0,0]f1=0.0,F=0.0,f2=0.0 ODF=19.55

popLA

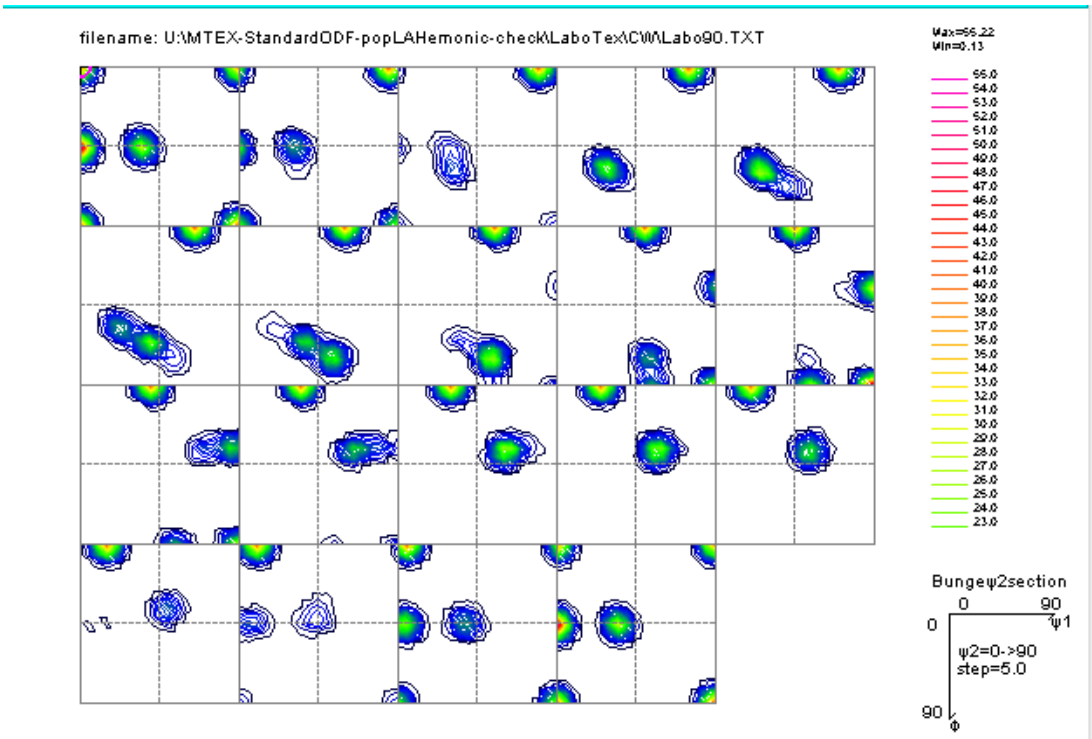


{hkl}<uvw>,popla
{001}<100>,15.58
{101}<-1-21>,9.86
{112}<-1-11>,8.74
{011}<100>,16.02
{001}<1-10>,2.99
{110}<1-11>,0.5
{111}<-1-12>,1.38
{011}<2-55>,3.2
{525}<1-51>,1.74
{013}<100>,1.42
{122}<2-21>,4.64
{113}<1-10>,1.17
{112}<1-10>,1.23
{233}<0-11>,0.01
{111}<0-11>,0.01
{213}<-1-42>,2.76
{132}<6-43>,11.57
{114}<-1-72>,1.97
{001}<2-10>,0.05
{012}<100>,1.69
{113}<-3-32>,2.62
{362}<8-53>,0.43
{011}<5-22>,6.29

(0,0,1)[1,0,0]f1=0.0,F=0.0,f2=0.0 ODF=15.58

参考

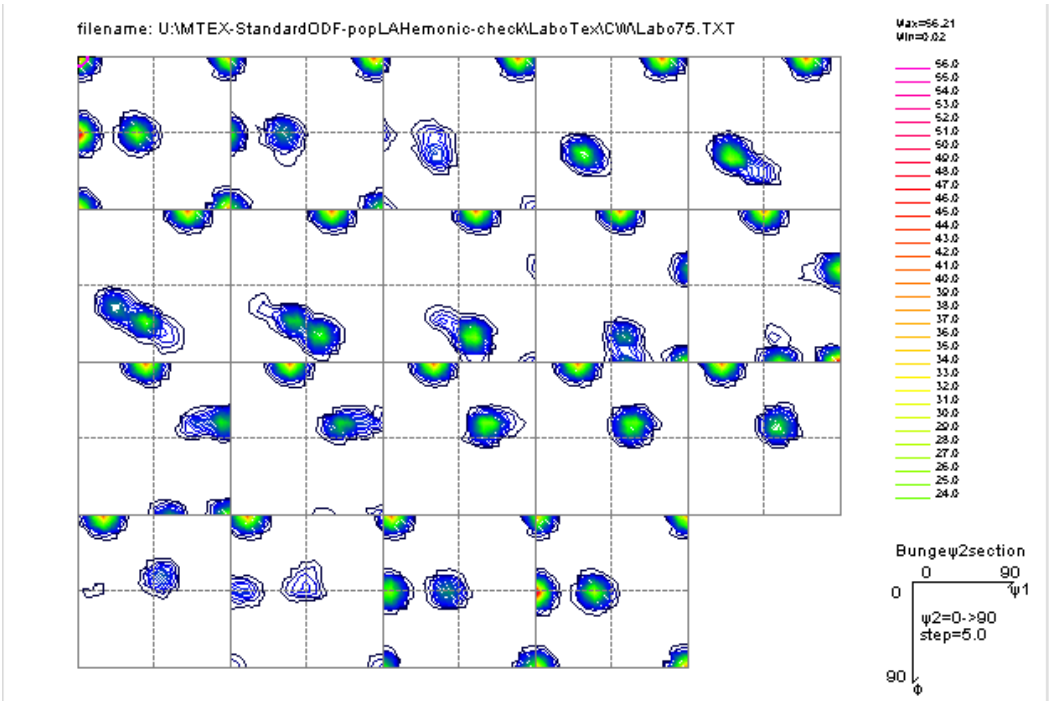
LaboTex90



(0,0,1)[1,0,0]f1=0.0,F=0.0,f2=0.0 ODF=40.52

{hkl}<uvw>,labo90
{001}<100>,40.52
{101}<-1-21>,28.66
{112}<-1-11>,30.3
{011}<100>,55.22
{001}<1-10>,0.26
{110}<1-11>,0.31
{111}<-1-12>,0.29
{011}<2-55>,0.29
{525}<1-51>,0.34
{013}<100>,0.3
{122}<2-21>,3.29
{113}<1-10>,0.37
{112}<1-10>,0.37
{233}<0-11>,0.28
{111}<0-11>,0.32
{213}<-1-42>,0.7
{132}<6-43>,26.86
{114}<-1-72>,0.3
{001}<2-10>,0.29
{012}<100>,0.33
{113}<-3-32>,0.16
{362}<8-53>,0.29
{011}<5-22>,14.93

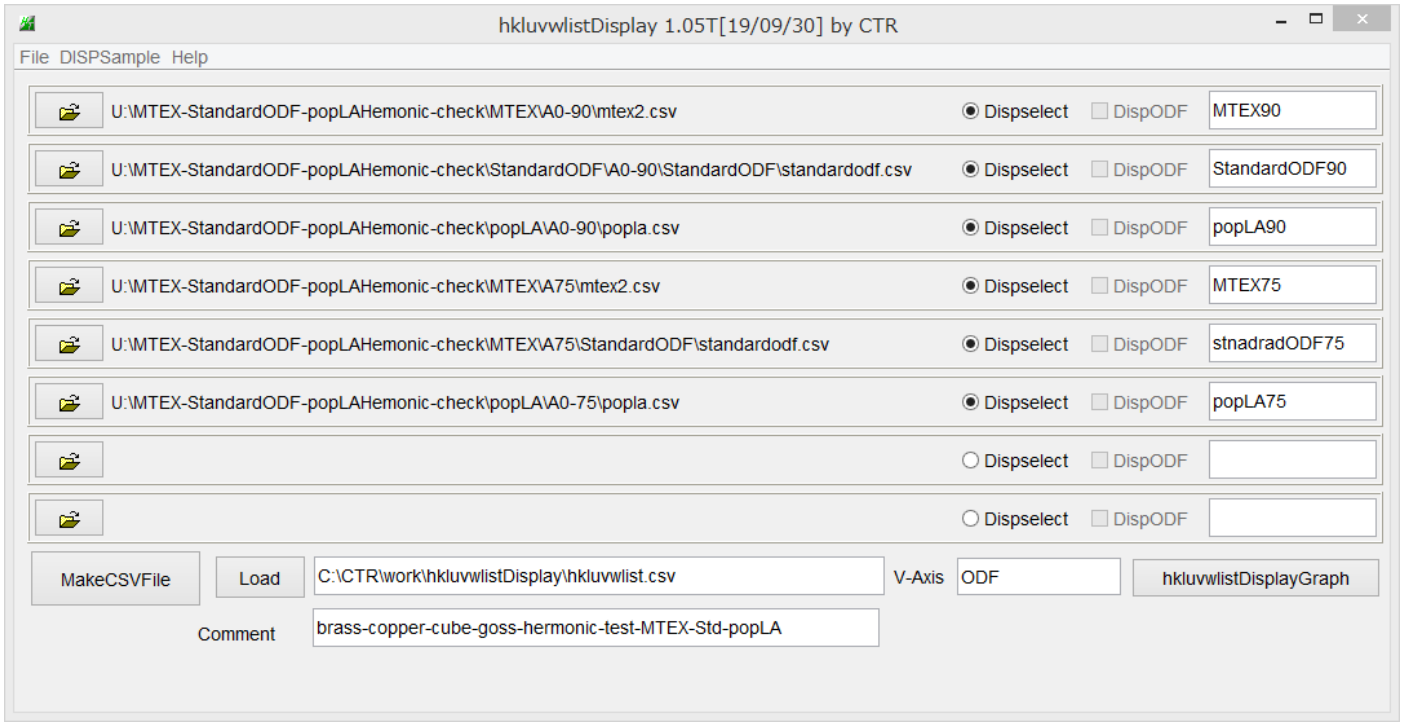
LaboTex75

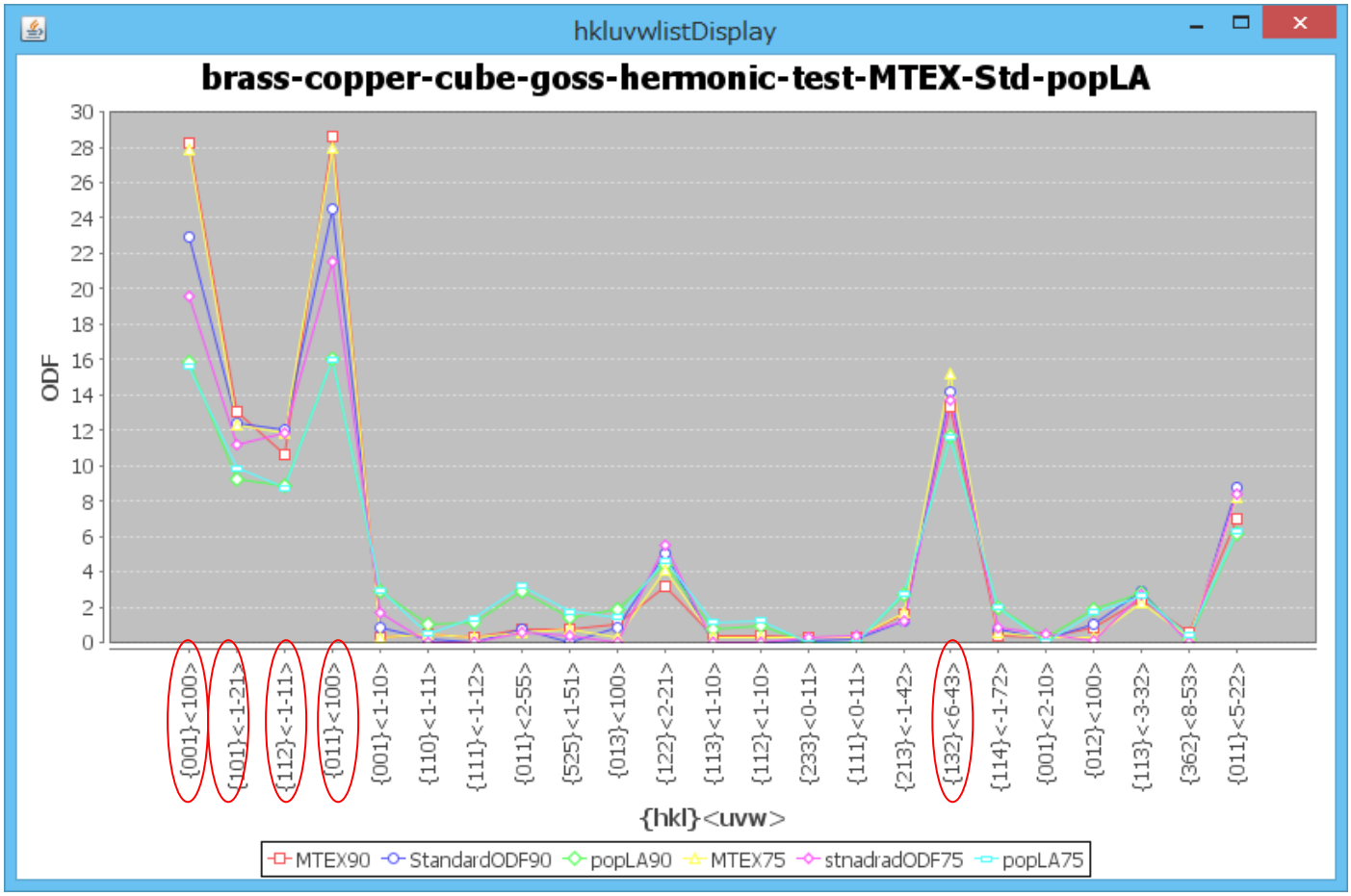


(0,0,1)[1,0,0]f1=0.0,F=0.0,f2=0.0 ODF=41.37

{hkl}<uvw>,labo75
{001}<100>,41.37
{101}<-1-21>,28.55
{112}<-1-11>,30.07
{011}<100>,56.21
{001}<1-10>,0.31
{110}<1-11>,0.26
{111}<-1-12>,0.28
{011}<2-55>,0.3
{525}<1-51>,0.28
{013}<100>,0.35
{122}<2-21>,3.77
{113}<1-10>,0.3
{112}<1-10>,0.33
{233}<0-11>,0.29
{111}<0-11>,0.35
{213}<-1-42>,1.44
{132}<6-43>,26.59
{114}<-1-72>,0.29
{001}<2-10>,0.21
{012}<100>,0.35
{113}<-3-32>,0.17
{362}<8-53>,0.29
{011}<5-22>,14.71

Ｌｉｓｔのグラフ化



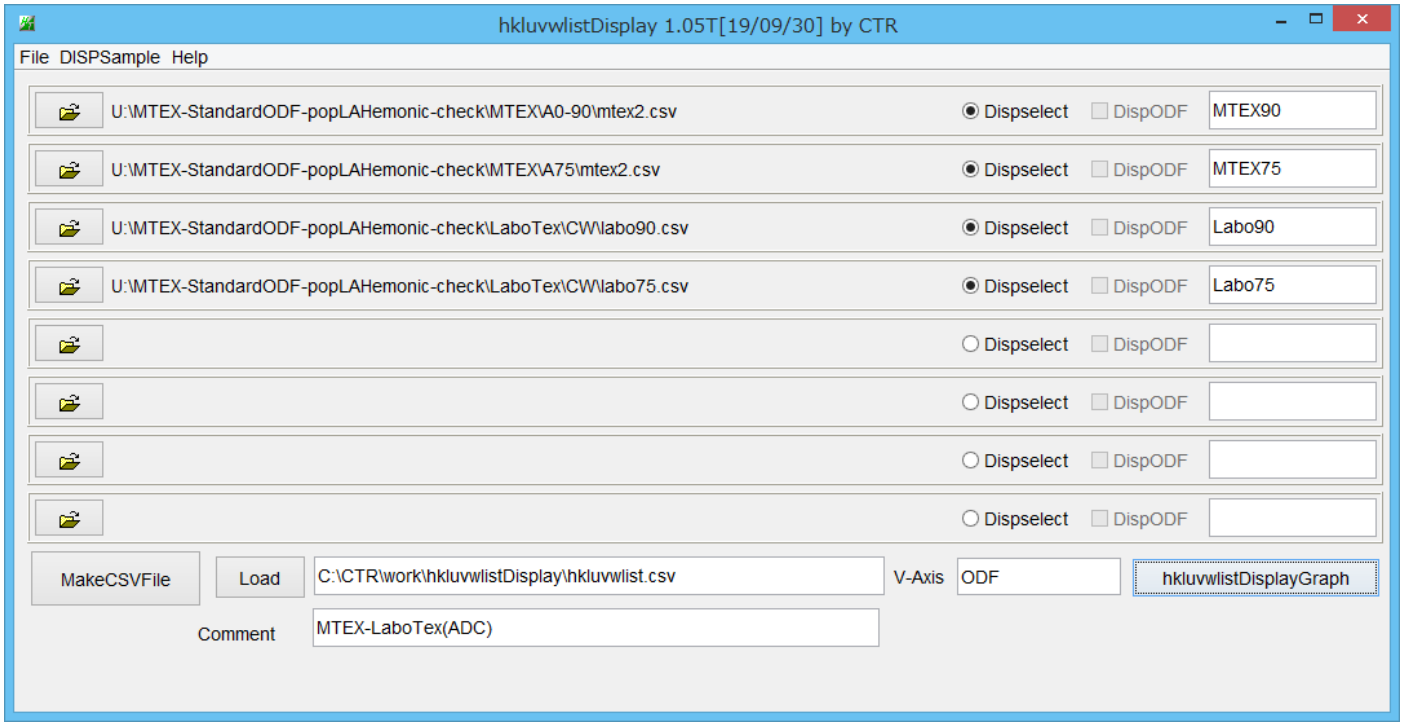


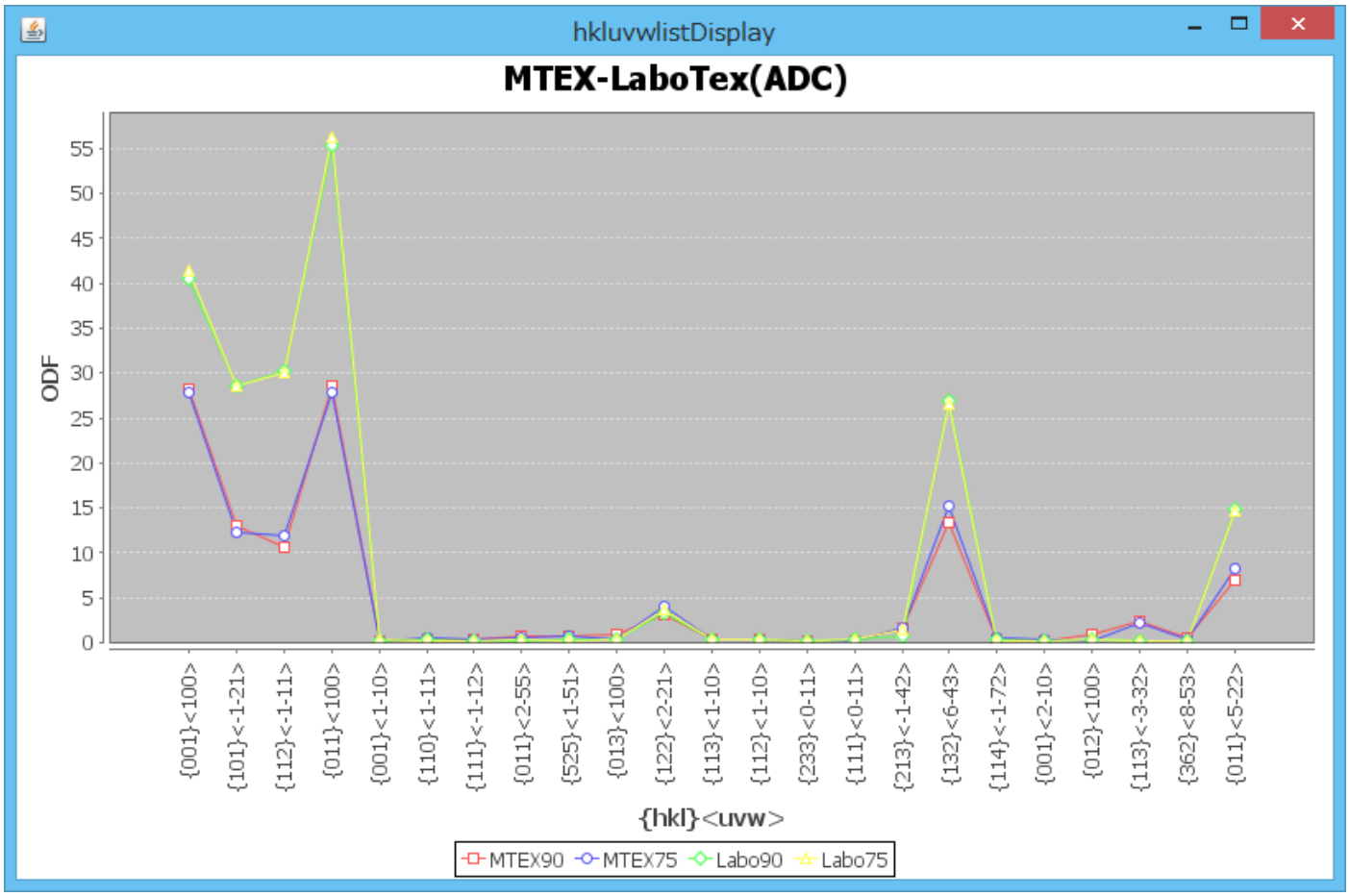
方位密度では、MTEX>StandardODF>popLA であるが、大きな違いは認められない。

α範囲が 90 度と 75 度では、MTEX,popLA はほぼ同一の結果が得られる。

MTEX は Hermonic に近い値が得られる。

参考、直説法（ADC）との比較



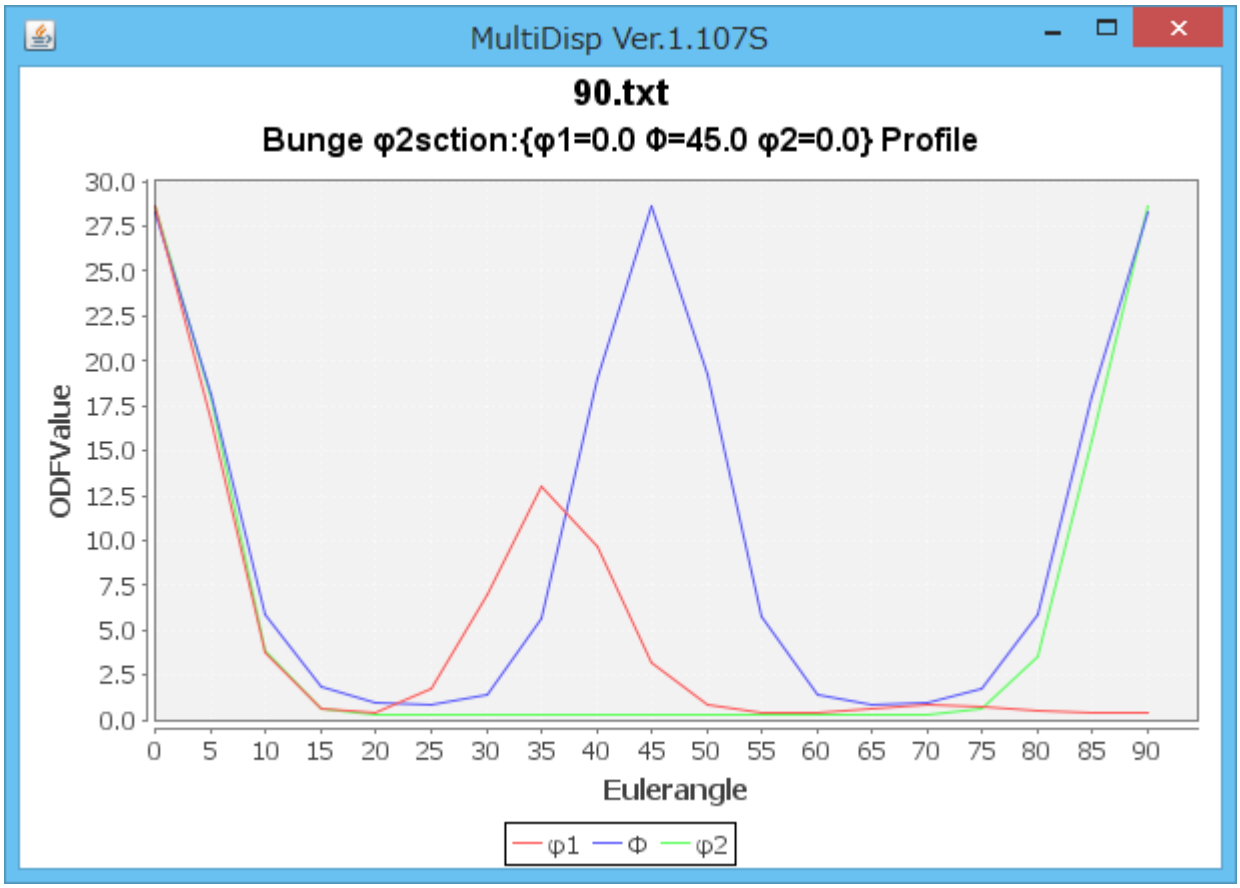


直接法（ADC）は間接法(Hermonic)に比べ結晶方位の密度分布で幅が狭く peak が強い

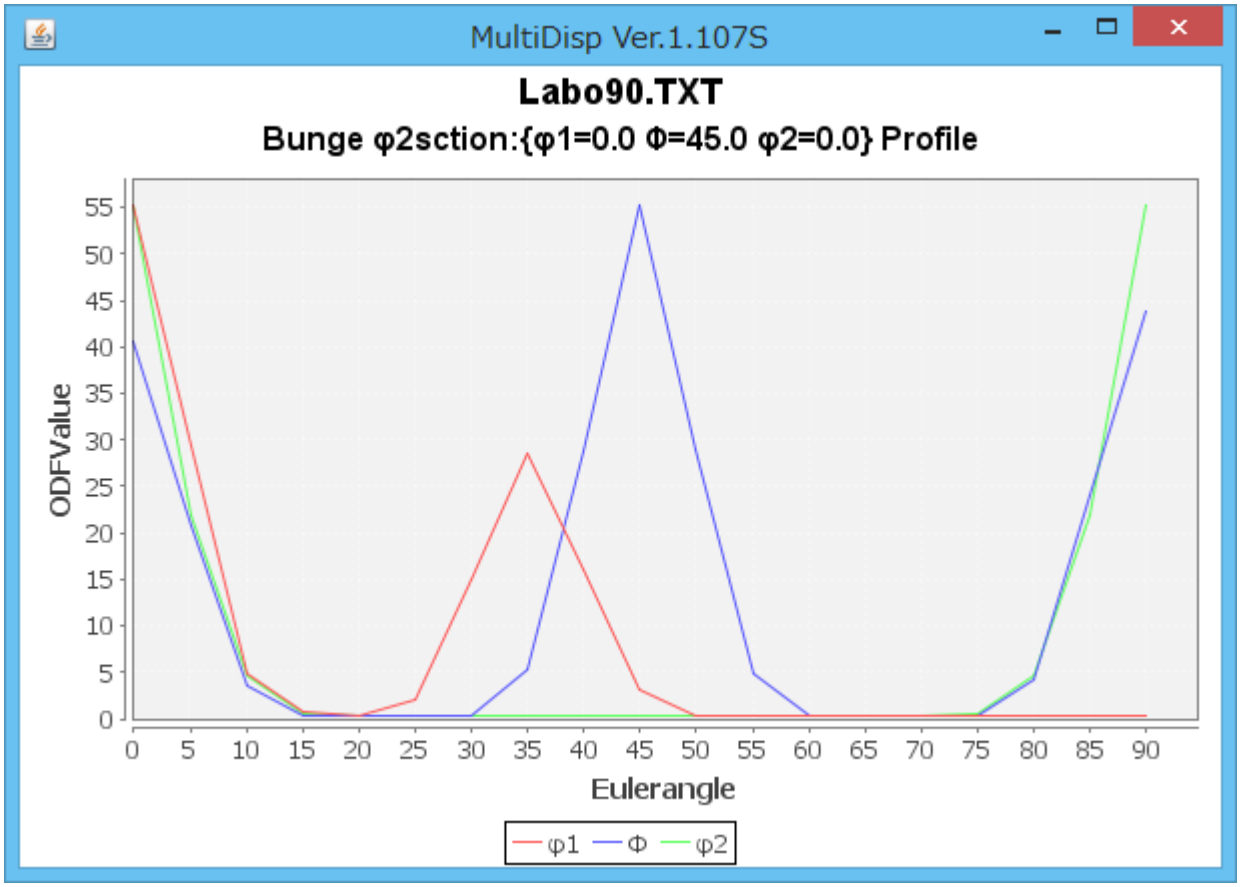
以下にＧｏｓｓ方位の３方向Ｅｕｌｅｒ角プロファイルを示す

結晶方位プロファイル比較（Ｅｕｌｅｒ角度）

ＭＴＥＸ（Ｇｏｓｓ）

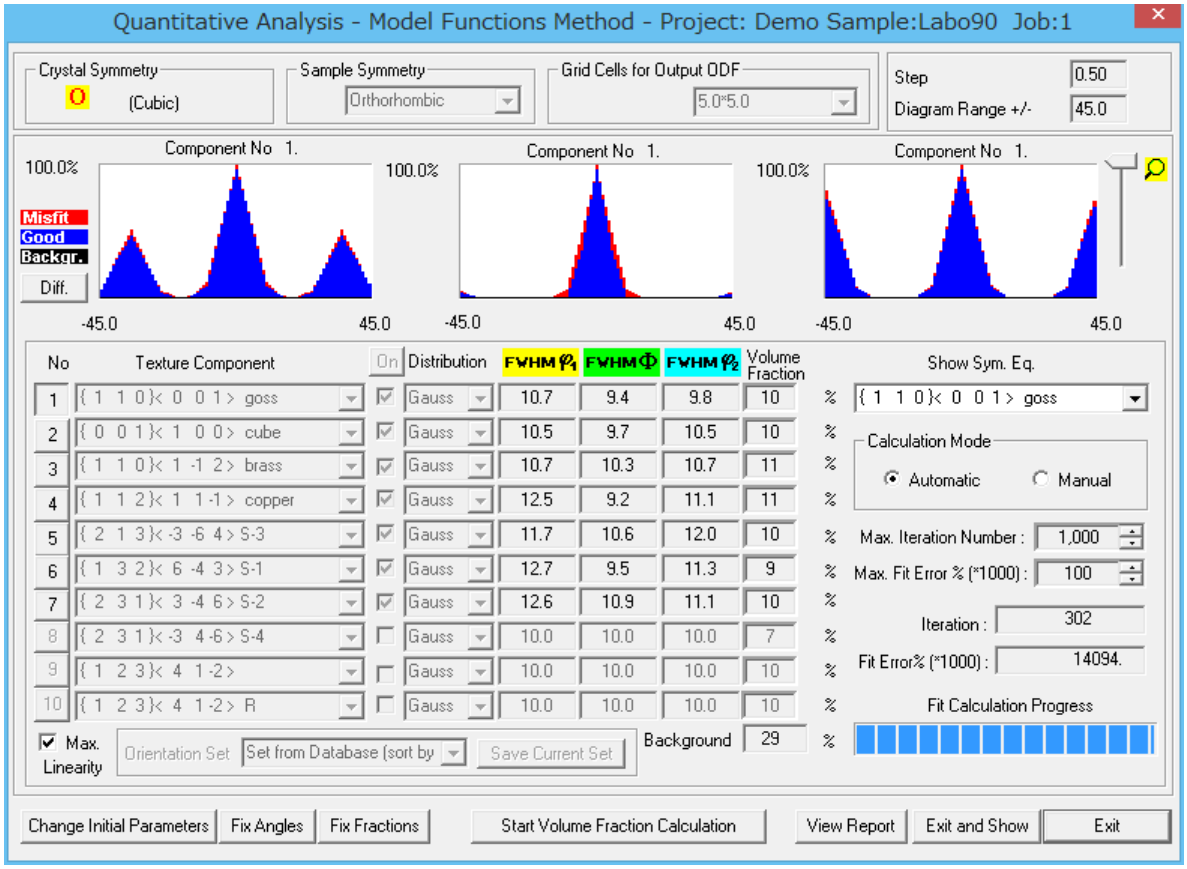


ＬａｂｏＴｅｘ（Ｇｏｓｓ）

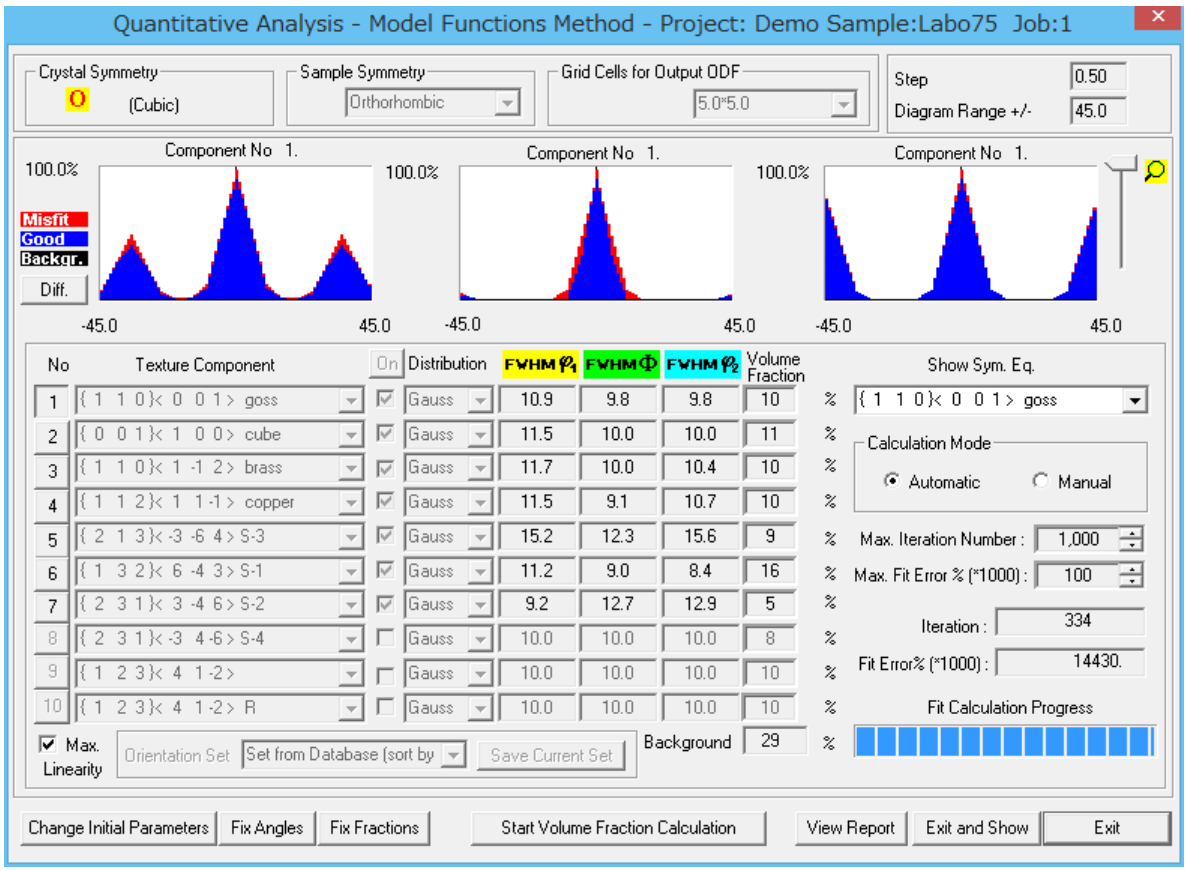


VolumeFraction（LaboTex）

α 0->90



α 0->75



α範囲に関係なくｇｏｓｓ，ｃｕｂｅｂｒａｓｓ，ｃｏｐｐｅｒは約ＶＦ１０％Ｓは合計で約３０％である。