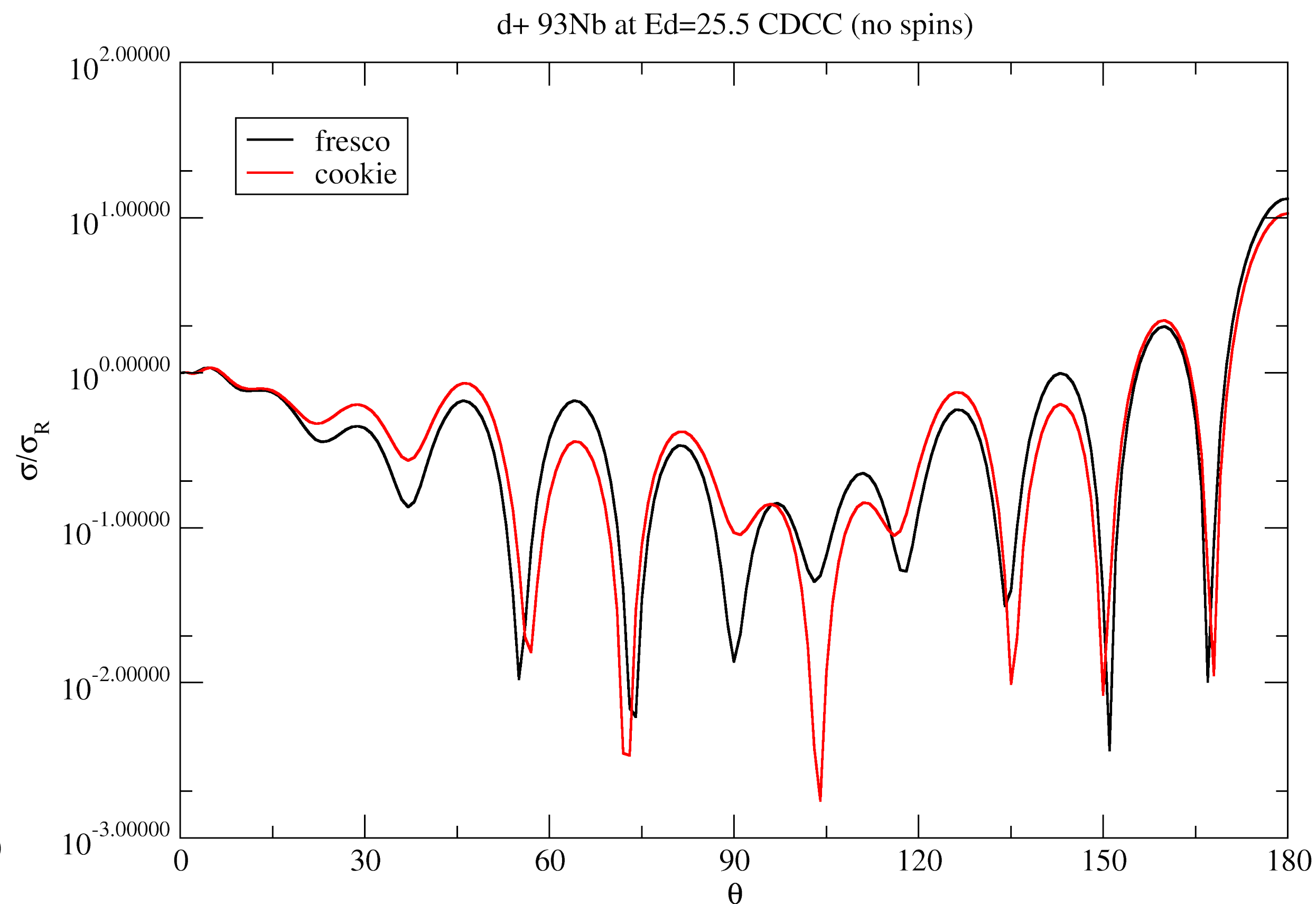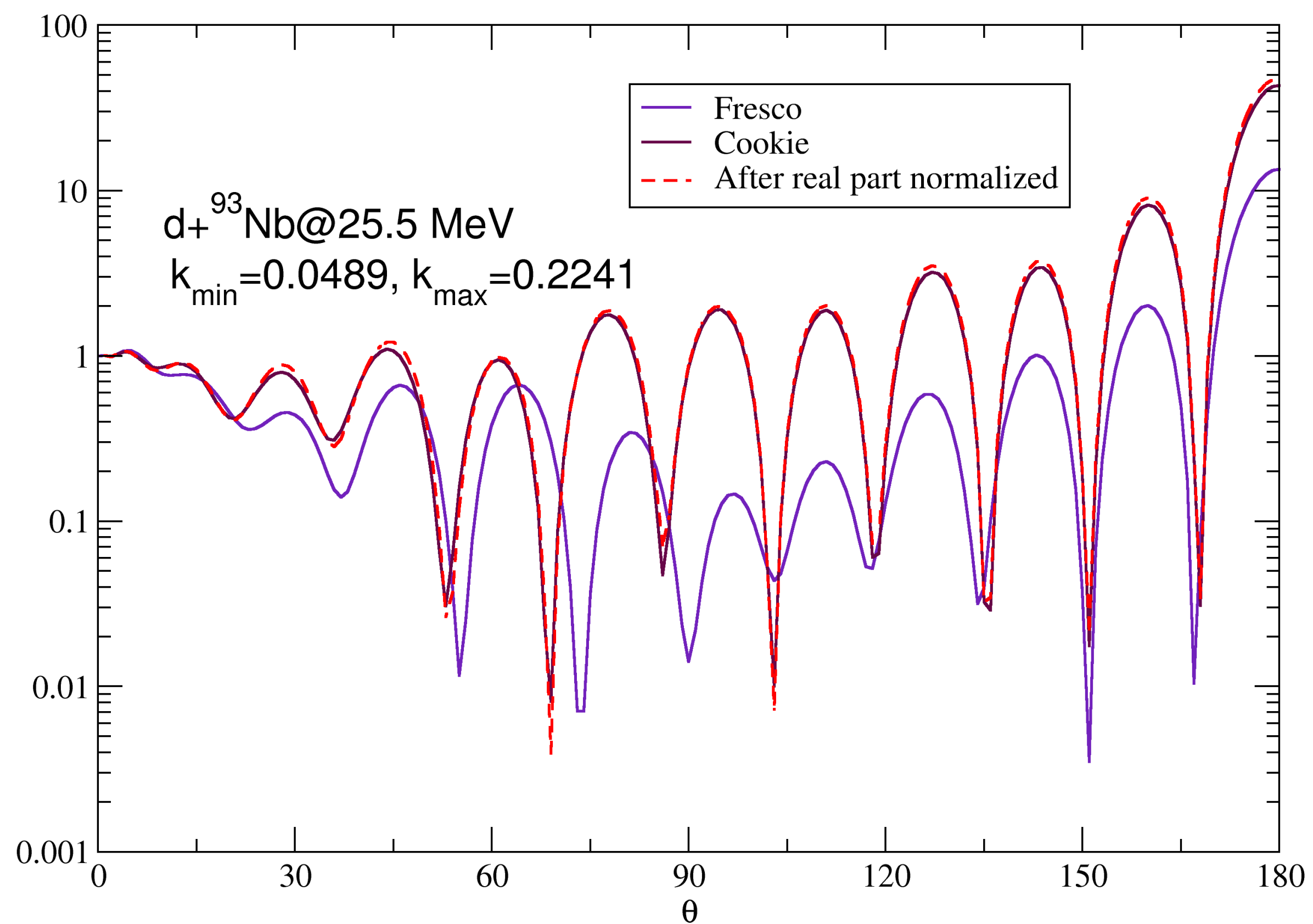# 计算可观测量

Calculation

经过更改后，可以发现结果有了很大程度上改善，但是还是和fresco有差距。

Calculation

比较S矩阵可以发现，弹性S矩阵复合的很好，但是SO1符合的不是很好

```
 0.0818093135   -0.1334667457       0
-0.0136259777   -0.0368428327       0
-0.1635111156    0.0271022069       1
-0.0199053986    0.0325595323       1
 0.0473217201    0.1470861247       2
 0.0246366669    0.0173717129       2
```

```
1          (7.92138920575103794E-002,-0.13486249786553139)
2    (1.17471624761542708E-002,-3.73562834628713841E-002)
1          (-0.16292915213224674,3.07002996762538310E-002)
2    (-3.56172088982394872E-002,1.32687610581223147E-002)
1          (5.01585901864053801E-002,0.14603509684256097)
2    (8.90484023866611012E-003,2.90787393740758217E-002)
```
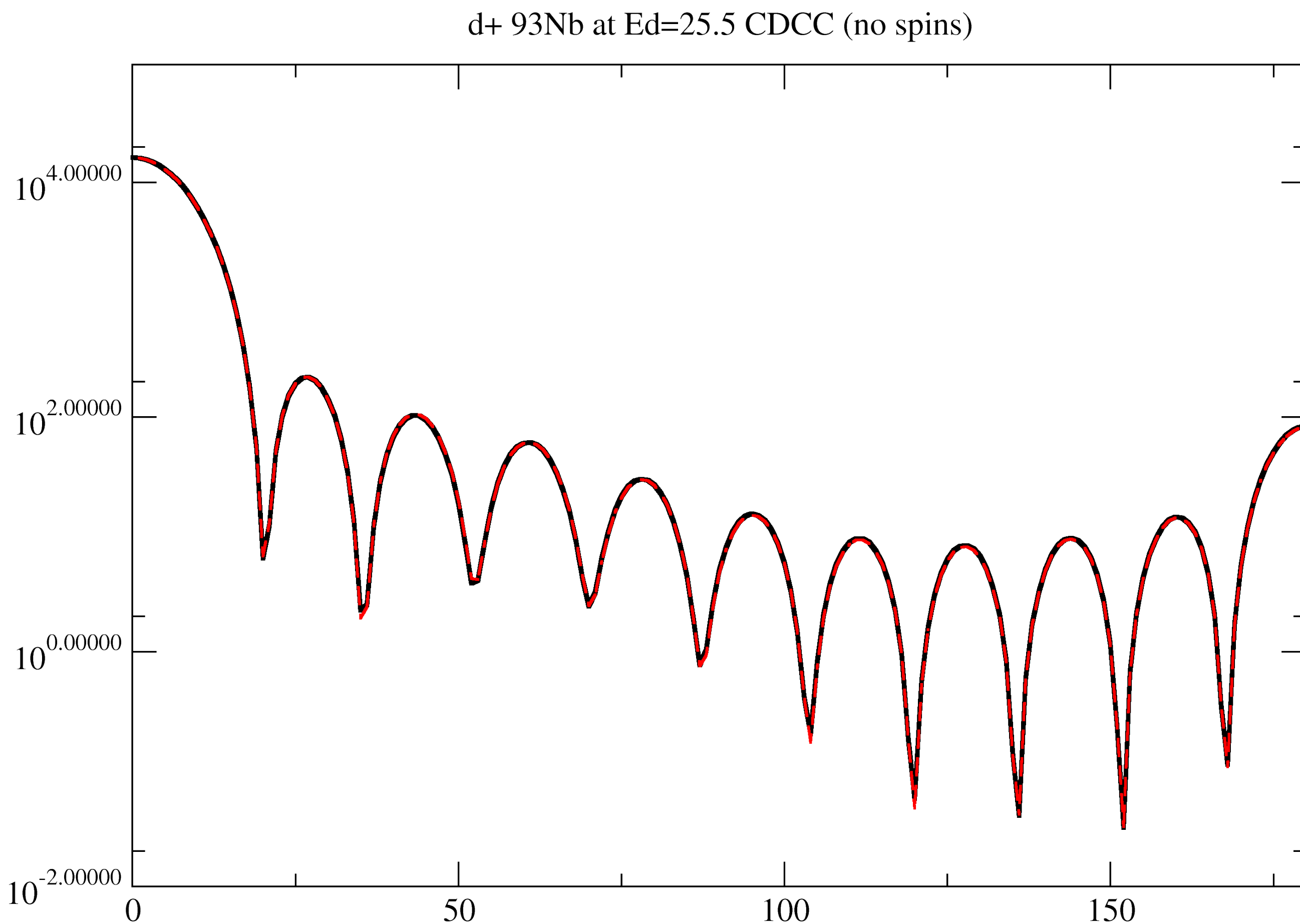
Calculation

比较S矩阵可以发现，弹性S矩阵复合的很好，但是其他项的S矩阵符合的不是很好，这可能是因为使用的不同的bin划分范围有一些区别。

0.0764817437	−0.1166747053	0
−0.0285385039	−0.0114735019	0
−0.0028699566	−0.0190662231	0
0.0286769364	−0.0474098469	0
−0.1499335375	0.0233420416	1
0.0092892843	0.0333103481	1
−0.0087005332	0.0202078839	1
−0.0573205046	0.0130797630	1
0.0384828983	0.1300493991	2
0.0345976596	−0.0061040801	2
0.0238784272	0.0052059071	2
0.0204409007	0.0433610906	2
0.1413447723	−0.0442388849	3
0.0048224664	−0.0351067864	3
0.0014464271	−0.0318828050	3
0.0398885818	−0.0262748088	3

1	$(7.08997216430278659E{-}002, -0.12151775542612490)$
2	$(-1.77022413699517676E{-}002, -2.32545220722141718E{-}002)$
3	$(9.13540542234048472E{-}003, -1.32996703669929633E{-}002)$
4	$(4.91332919984597966E{-}002, 1.05394664685097405E{-}002)$
1	$(-0.15018446196798838, 3.12970722536203977E{-}002)$
2	$(-8.29966472050267835E{-}003, 3.08567526005687105E{-}002)$
3	$(-1.84240583336306718E{-}002, 7.74912816964624419E{-}003)$
4	$(-2.83955300992645224E{-}002, -4.52643826511972200E{-}002)$
1	$(4.56196017397226053E{-}002, 0.12888814114244113)$
2	$(2.86602191263844557E{-}002, 1.12272972495361000E{-}002)$
3	$(1.11254189923126450E{-}002, 1.91324558559765427E{-}002)$
4	$(-3.07968144412297122E{-}002, 3.17584800761740310E{-}002)$
1	$(0.14084661177728794, -5.15482831799217028E{-}002)$
2	$(1.83060190191347803E{-}002, -2.22531198598836417E{-}002)$
3	$(2.34530269377349644E{-}002, -1.78160266003879707E{-}002)$
4	$(3.66361836846495481E{-}002, 2.70437849134854830E{-}002)$

Calculation

我们还考察了不考虑库伦相互作用的情况，截面可以几乎完全重合。

d+ 93Nb at Ed=25.5 CDCC (no spins)

$$f_n(\theta) = \frac{1}{2ik} \sum_{L=0}^{\infty} (2L+1) P_L(cos\theta)$$

$$\times (S_L - 1)\exp(2i\sigma_L)$$

$$f_c(\theta) = -\frac{\eta}{2k\sin^2(\theta/2)}$$

$$\times \exp(-i\eta \ln(\sin^2(\theta/2)) + 2i\sigma_0)$$

Calculation

此时的S矩阵也是这样的

```
-0.1581260936    -0.0644323934         0
 0.0054317836     0.0353540774         0
-0.0349379617     0.0227120888         0
-0.0605546916     0.0223057581         0
-0.1605934486    -0.0418291137         1
 0.0078059585     0.0363278743         1
-0.0300764008     0.0262722761         1
-0.0547166831     0.0290602845         1
-0.1682126086    -0.0007969707         2
 0.0133618798     0.0391059497         2
-0.0191107679     0.0339735177         2
-0.0459414776     0.0405894958         2
```

```
1        (-0.16292337094278178,-5.63260724186618530E-002)
2  (-1.04154130335866093E-002,3.25413692103048158E-002)
3 (-3.48022698385187443E-002,-1.15079991702749726E-002)
4 (-3.76633896132004126E-002,-4.58683829084472680E-002)
1        (-0.16389069473467646,-3.45440696494064975E-002)
2  (-9.04803264168976135E-003,3.36125151815278647E-002)
3 (-3.47975724663556960E-002,-6.49169522845561685E-003)
4 (-4.23147300295580037E-002,-3.89314352664362900E-002)
1        (-0.16971342572450693,8.33008485937908154E-003)
2  (-5.84630109440923123E-003,3.68575047504032041E-002)
3  (-3.41979933478821427E-002,5.57606252035451437E-003)
4 (-5.02328802084814549E-002,-2.70591091876816285E-002)
```