

```

1 /* slowInvFT-linear-lowSpace-filter.c, by S. Tanaka, 2006 */
2 #include <math.h>
3 #include <stdio.h>
4 #include <time.h>
5
6 #define twoPi 3.1415926535 * 2.0
7 #define N 512
8
9 FILE *fpR, *fpW;
10
11 void main( void )
12 {
13     int t, fn, j, fdmy[N];
14     double dataR[N], DataR[N], DataI[N], iDataR[N], iDataI[N];
15     double wR[N], wI[N];
16     double ifR, ifI, pdmy;
17     char ldmy0[100], ldmy1[20], ldmy2[20], ldmy3[20], ldmy4[20], ldmy5[20];
18
19     fpR = fopen("slowFT-linear-lowSpace.txt", "r");
20
21     fseek(fpR, 0L, SEEK_SET);
22     fscanf(fpR, "%s", &ldmy0);
23     fscanf(fpR, "%s %s %s %s %s", &ldmy1, &ldmy2, &ldmy3, &ldmy4, &ldmy5);
24     for (fn=0; fn<N; fn++) {
25         fscanf(fpR, "%d %lf %lf %lf %lf ",
26             &fdmy[fn], &dataR[fn], &DataR[fn], &DataI[fn], &pdmy);
27         /* printf(" %3d %10.6f %10.6f %10.6f %10.6f %n",
28             fdmy[fn], dataR[fn], DataR[fn], DataI[fn], pdmy); */
29     }
30     for (j=0; j<N; j++) {
31         wR [j] = cos( twoPi*(-j)/N );
32         wI [j] = -sin( twoPi*(-j)/N );
33     }
34
35     //特定周波数を取り除く (零にする)
36     DataR[ 2]=0.0; DataI[ 2]=0.0;
37     DataR[510]=0.0; DataI[510]=0.0;
38
39     for (t=0; t<N; t++) {
40         ifR = DataR[0];
41         ifI = DataI[0];
42         j = 0;
43         for (fn=1; fn<N; fn++) {
44             j = (j + t) % N; /* 回転因子乗数の法則性 */
45             ifR = ifR + DataR[fn]*wR[j] - DataI[fn]*wI[j]; /* 実数部乗算後足込み */
46             ifI = ifI + DataR[fn]*wI[j] + DataI[fn]*wR[j]; /* 虚数部乗算後足込み */
47         }
48         iDataR[t] = ifR/N;
49         iDataI[t] = ifI/N;
50     }
51
52     fpW = fopen("slowInvFT-linear-lowSpace-filter.txt", "w");
53     fprintf(fpW, " 離散 逆フーリエ変換%fn");
54     fprintf(fpW, "t,fn Re(F(fn)) Im(F(fn)) 逆変換後実数 逆変換後虚数%fn");
55
56     for (t=0; t<N; t++) {
57         fprintf(fpW, " %3d %10.6f %10.6f %10.6f %10.6f %n",
58             t, DataR[t], DataI[t], iDataR[t], iDataI[t]);
59     }
60     printf("Result written to 'slowInvFT-linear-lowSpace-filter.txt.' %fn");
61
62 }

```