

一、《MATLAB 程序设计实践》Matlab 基础

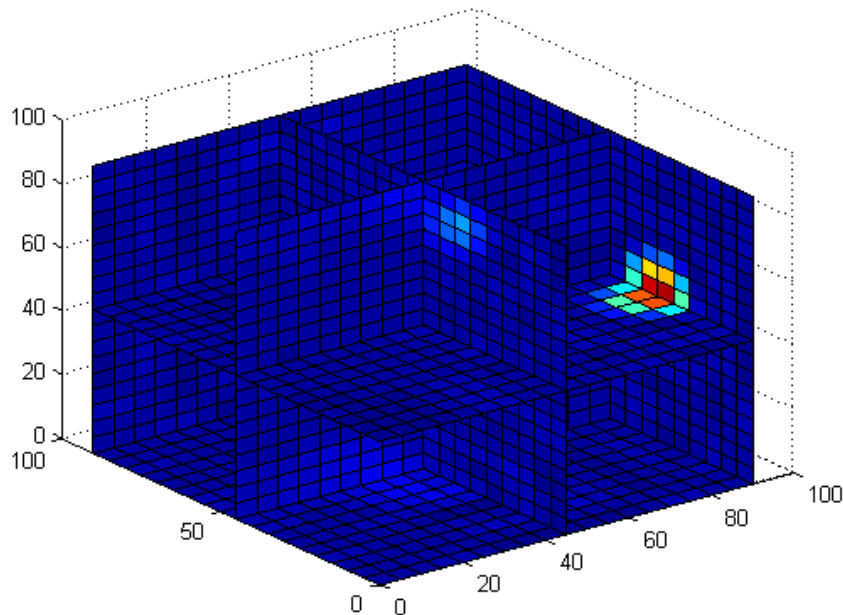
班级：

学号：

姓名：

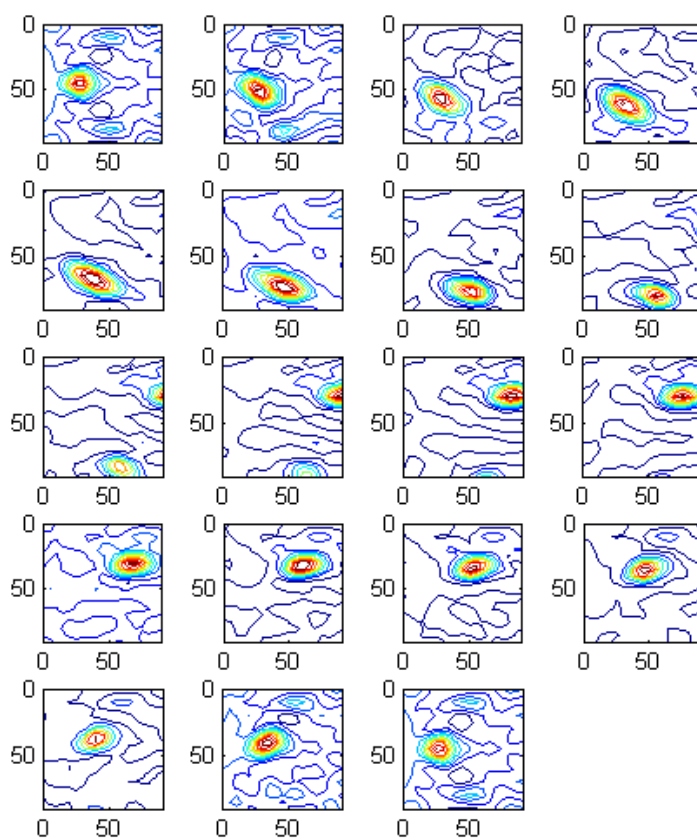
表示多晶体材料织构的三维取向分布函数($f=f(\phi_1, \phi, \phi_2)$)是一个非常复杂的函数，难以精确的用解析函数表达，通常采用离散空间函数值来表示取向分布函数，Data.txt 是三维取向分布函数的一个实例。由于数据量非常大，不便于分析，需要借助图形来分析。请你编写一个 matlab 程序画出如下的几种图形来分析其取向分布特征：

(1) 用 Slice 函数给出其整体分布特征；

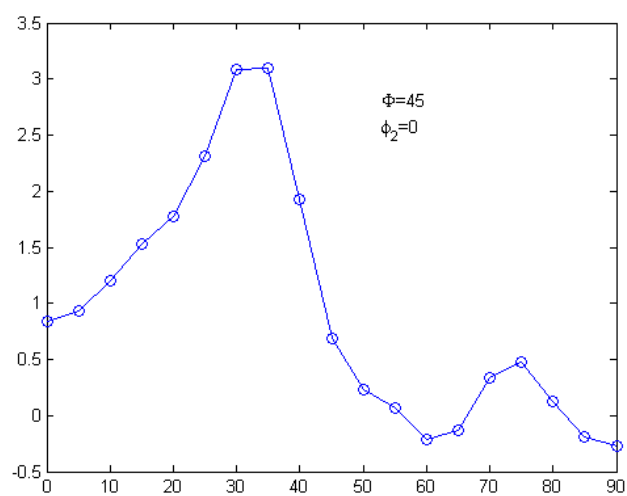


(2) 用 pcolor 或 contour 函数分别给出($\phi_2=0, 5, 10, 15, 20, 25, 30,$

35 ... 90)切面上 f 分布情况(需要用到 subplot 函数);



(3) 用 plot 函数给出沿 α 取向线($\varphi_1=0\sim 90$, $\varphi=45$, $\varphi_2=0$)的 f 分布情况。



备注：data.txt 数据格式说明

Text Format of ODF File (Arbitrary Resolution) 1HXNP23ZH

19 19 19

0

1.00 1.00 1.00 90.00 90.00 90.00

3

G:\yao\TAN203111.HPF

G:\yao\TAN203200.HPF

G:\yao\TAN203220.HPF

1 1 1

2 0 0

2 2 0

1

5.0

1

0

2

15 6

0.0100 0.0872

0

1.1550 1.5135 1.7233 0.9821 0.1032 -0.2535 -0.6146 -1.1374 -1.3105 -1.2516 -1.3105 -1.1374 -0.6146 -0.2535 0.1032 0.9821 1.7233 1.5134 1.1550

0.9662 0.5766 0.1854 -0.1706 -0.4627 -0.4562 0.0223 0.7240 1.4358 2.0979 2.4339 2.1947 1.4272 0.3440 -0.5096 -0.5974 -0.3386 -0.4701 -0.6815

0.7798 0.5766 0.1854 -0.1706 -0.4627 -0.4562 0.0223 0.7240 1.4358 2.0979 2.4339 2.1947 1.4272 0.3440 -0.5096 -0.5974 -0.3386 -0.4701 -0.6815

1.0338 0.5262 -0.1022 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882

1.4660 0.9259 0.1022 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882

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1.6577 1.3190 0.1022 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882

1.7561 1.4224 0.1022 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882

1.9250 1.6216 0.1022 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882

2.0034 1.7295 0.1022 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882

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1.0338 0.5262 -0.1022 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882 -0.3882

0.7798 0.5766 0.1854 -0.1706 -0.4627 -0.4562 0.0223 0.7240 1.4358 2.0979 2.4339 2.1947 1.4272 0.3440 -0.5096 -0.5974 -0.3386 -0.4701 -0.6815

0.9662 1.1511 1.1644 0.5155 -0.1995 -0.4199 -0.4300 -0.4011 -0.0788 0.3474 0.4632 0.4056 0.3117 -0.0093 -0.1896 0.2993 0.7973 0.4957 0.1251

1.1550 1.5134 1.7233 0.9821 0.1032 -0.2535 -0.6146 -1.1374 -1.3105 -1.2516 -1.3105 -1.1374 -0.6146 -0.2535 0.1032 0.9821 1.7233 1.5135 1.1550

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1.5135 1.7233 0.9821 0.1032 -0.2535 -0.6146 -1.1374 -1.3105 -1.2516 -1.3105 -1.1374 -0.6145 -0.2535 0.1032 0.9821 1.7233 1.5134 1.1550 1.5134

1.2154 1.2543 0.5921 -0.1402 -0.3682 -0.3942 -0.4211 -0.1883 0.1855 0.3372 0.3607 0.3253 0.0319 -0.1283 0.3810 0.8893 0.5646 0.1310 0.4372

0.7122 0.3332 -0.1129 -0.4565 -0.4134 0.1235 0.7792 1.3102 1.8281 2.2038 2.0876 1.3793 0.3176 -0.4834 -0.5032 -0.2040 -0.3623 -0.6734 -0.5568

0.5669 -0.1735 -0.3309 -0.2861 -0.1508 0.4591 0.9745 0.8506 0.7569 1.0754 1.1813 0.7755 0.1567 -0.3734 -0.4696 -0.0534 0.3951 0.5332 0.4085

0.7541 -0.0169 0.0169 0.0826 -0.0747 0.1301 0.1023 -0.6888 -1.1692 -0.7652 -0.3090 -0.1186 0.0998 0.1662 0.0921 0.3723 0.9576 1.2749 1.0942

0.9423 0.3477 0.2628 -0.0707 -0.6133 -0.6475 -0.7542 -1.3954 -1.5415 -0.8644 -0.3242 -0.0872 0.2546 0.3851 0.1506 0.0647 0.2516 0.3775 0.3475

1.0790 0.5795 0.2063 -0.4092 -0.9385 -0.8877 -0.8961 -1.2691 -1.1629 -0.5192 -0.1713 -0.1073 0.0217 -0.0377 -0.2428 -0.1961 -0.0262 0.0524 0.1159

1.2737 0.8283 0.5732 0.5064 0.5733 0.5391 -0.0520 -0.8010 -0.8534 -0.5124 -0.4819 -0.5028 -0.3670 -0.4031 -0.3687 0.0703 0.4511 0.5298 0.5389

1.4507 1.1760 1.6616 3.0141 4.2246 4.0570 2.3997 0.7500 2.782 0.2529 -0.1375 -0.3567 -0.1769 -0.1556 -0.1490 0.1502 0.2324 0.0168 0.0265

1.4486 1.3013 2.4272 5.0625 7.7110 8.3338 6.4204 3.7711 2.1741 1.3114 0.4630 0.0921 0.2533 0.1694 -0.0899 -0.1098 -0.3034 -0.6731 -0.5503

1.2706 1.0187 1.8879 4.4746 7.9948 10.3744 9.7591 6.7241 3.5800 1.5144 0.3713 0.0577 0.1443 -0.1046 -0.4028 -0.1958 0.0195 -0.0579 0.0724

1.0794 0.6873 0.7064 1.9435 4.8396 8.2822 9.5326 7.3994 3.9460 1.5038 0.3511 -0.0998 -0.3279 -0.6421 -0.7001 -0.1579 0.3859 0.4701 0.4477

1.0219 0.7219 0.3113 0.2600 1.3749 3.8702 5.7704 5.1283 2.9920 1.3914 0.5027 -0.1922 -0.5599 -0.5558 -0.3613 -0.0505 0.1319 0.0573 -0.0389

要“帮助”，请按 F1

数据说明部分，与作图无关

此方向表示 f 随着 ϕ_1 从 0,5,10,15, 20 ...到 90 的变化而变化

表示以下数据为 $\phi_2=0$ 的数据，即 $f(\phi_1, \phi, 0)$

此方向表示 f 随着 ϕ 从 0,5,10,15, 20 ...到 90 的变化而变化