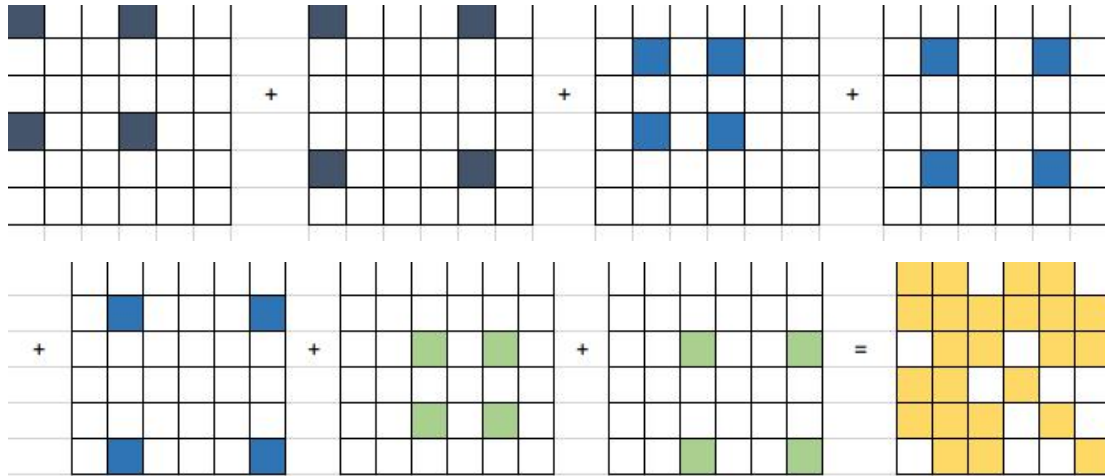
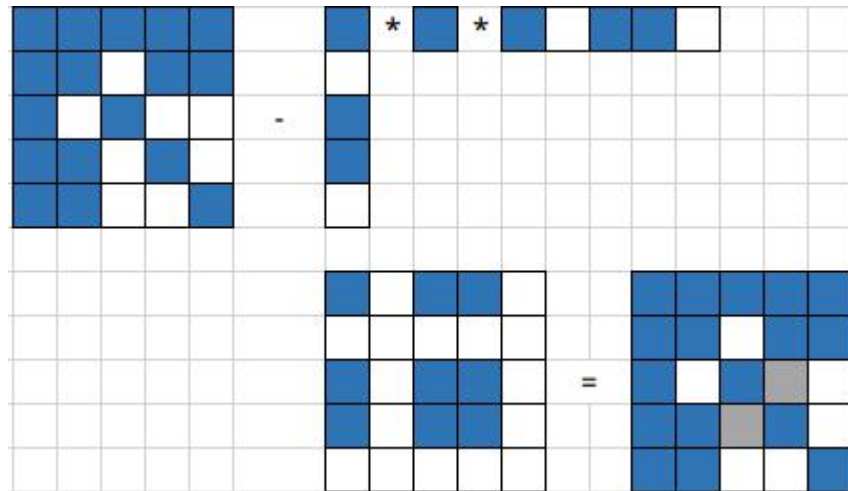


第一题 (1) :



第一题 (2) :



第二题 :

```
H.block(j*3 + 6*poseNums,j*3 + 6*poseNums,3,3)
+=jacobian_Pj.transpose() * jacobian_Pj;
H.block(i*6,j*3 + 6*poseNums, 6,3) +=
jacobian_Ti.transpose() * jacobian_Pj;
```

结果 :

147.51
129.146
108.42
86.8786
66.7165
53.3602

50.0706
49.9072
46.1212
41.646
37.4764
36.9655
32.5123
29.4255
28.6926
25.7302
25.2799
23.9525
23.4874
22.1444
3.75546
3.63333
3.59899
3.48363
3.44025
3.26522
3.2201
2.97983
2.74213
2.53162
0.420392
0.394421
0.349009
0.304702
0.284198
0.269621
0.261614
0.253395
0.250928
0.247525
0.233361
0.20687
0.195922
0.185235
0.182312
0.180179
0.17752
0.174138
0.16958
0.168057

0.163943
0.161402
0.158017
0.154701
0.152969
0.146307
0.145153
0.144042
0.141768
0.135736
0.131691
0.126308
0.122724
0.122139
0.120157
0.119543
0.116115
0.0479554
0.0391613
0.0382714
0.0370505
0.0348714
0.0338867
0.0307974
0.0285107
0.0273249
0.0256439
0.024074
0.0217149
0.0189657
0.0180311
0.0160844
0.0156509
0.0143411
0.0136067
0.0133183
0.0130406
0.0128135
0.0125244
0.0122748
0.0104077
0.00982936
0.00897393
0.0082873

0.00763381
0.00734249
0.00701361
0.00634341
0.00608493
0.00547299
0.0053236
0.00520788
0.00502341
0.0048434
0.00451083
0.0042627
0.00386223
0.00351651
0.00302963
0.00253459
0.00230246
0.00172459
0.000422374
7.67887e-17
6.41714e-17
5.8224e-17
4.41052e-17
2.72705e-17
2.11966e-17
1.09051e-17

注：奇异值有 7 个非常接近于 0，说明不确定度为 7，零空间维度为 7