Transform

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1 介绍

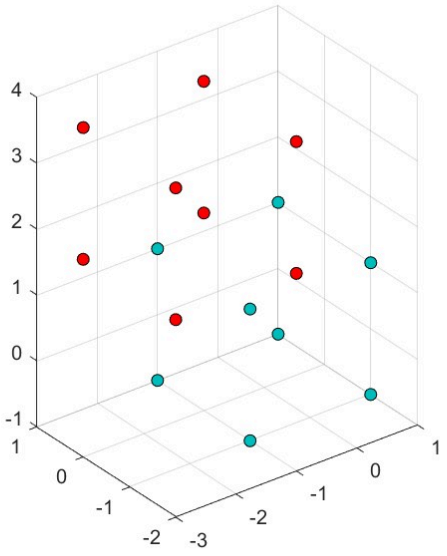
Transform用于坐标的三维变换。

2 案例

2.1 Translate (Flag=1)

```
P1=[-1,1,1;1,1,1;1,-1,1;-1,-1,1;-1,1,-1;1,1,-1;1,-1,-1;-1,-1,-1];
T=Transform(P1);
T=Translate(T,-2,-1,3);
P2=Solve(T);
scatter3(P1(:,1),P1(:,2),P1(:,3), ...
  'MarkerEdgeColor','k',...
  'MarkerFaceColor',[0 .75 .75]);
hold on
scatter3(P2(:,1),P2(:,2),P2(:,3), ...
  'MarkerEdgeColor','k',...
  'MarkerFaceColor',[1 0 0]);
axis equal
```

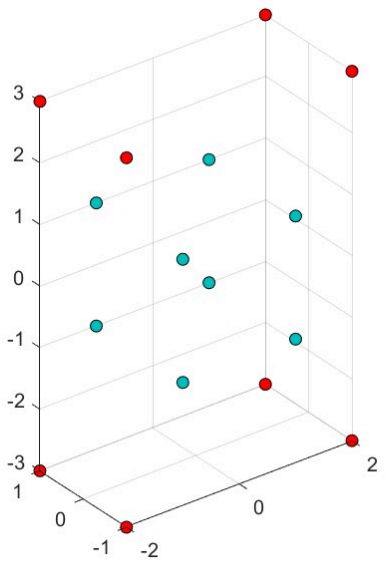
平移变换



2.2 Scale (Flag=2)

```
P1=[-1,1,1;1,1,1;1,-1,1;-1,-1,1;-1,1,-1;1,1,-1;1,-1,-1;-1,-1,-1];
T=Transform(P1);
T=Scale(T,2,1,3);
P2=Solve(T);
scatter3(P1(:,1),P1(:,2),P1(:,3), ...
  'MarkerEdgeColor','k',...
  'MarkerFaceColor',[0 .75 .75]);
hold on
scatter3(P2(:,1),P2(:,2),P2(:,3), ...
  'MarkerEdgeColor','k',...
  'MarkerFaceColor',[1 0 0]);
axis equal
```

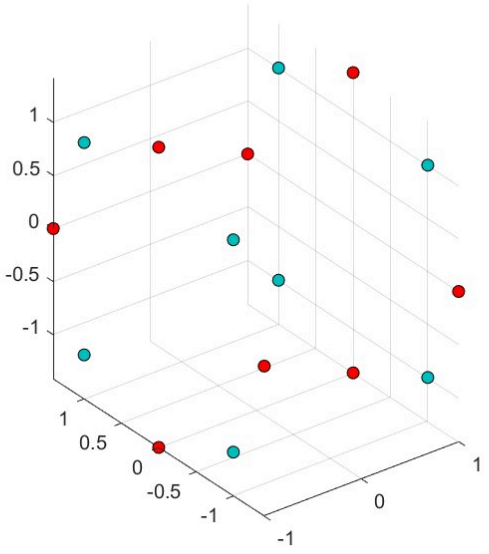
缩放



2.3 Rotate (Flag=3)

```
P1=[-1,1,1;1,1,1;1,-1,1;-1,-1,1;-1,1,-1;1,1,-1;1,-1,-1;-1,-1,-1];
T=Transform(P1);
T=Rotate(T,45,0,0);
P2=Solve(T);
scatter3(P1(:,1),P1(:,2),P1(:,3), ...
  'MarkerEdgeColor','k',...
  'MarkerFaceColor',[0 .75 .75]);
hold on
scatter3(P2(:,1),P2(:,2),P2(:,3), ...
  'MarkerEdgeColor','k',...
  'MarkerFaceColor',[1 0 0]);
axis equal
```

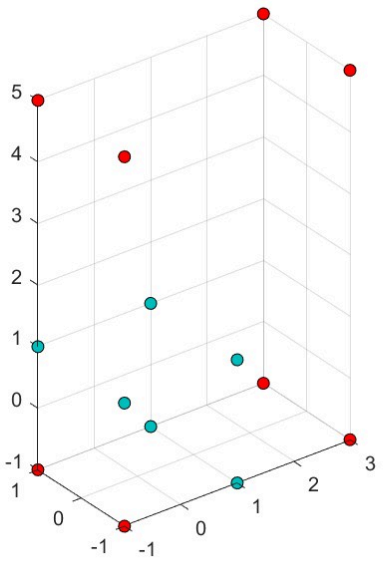
旋转



2.4 Scale wirh origin point (Flag=4)

```
P1=[-1,1,1;1,1,1;1,-1,1;-1,-1,1;-1,1,-1;1,1,-1;1,-1,-1;-1,-1,-1];
T=Transform(P1);
T=Scale(T,2,1,3,'Ori',[-1,-1,-1]);
P2=Solve(T);
scatter3(P1(:,1),P1(:,2),P1(:,3), ...
  'MarkerEdgeColor','k',...
  'MarkerFaceColor',[0 .75 .75]);
hold on
scatter3(P2(:,1),P2(:,2),P2(:,3), ...
  'MarkerEdgeColor','k',...
  'MarkerFaceColor',[1 0 0]);
axis equal
```

绕原点缩放



2.5 Rotate wirh origin point (Flag=5)

```
P1=[-1,1,1;1,1,1;1,-1,1;-1,-1,1;-1,1,-1;1,1,-1;1,-1,-1;-1,-1,-1];
T=Transform(P1);
T=Rotate(T,0,0,45,'Ori',[-1,-1,-1]);
P2=Solve(T);
scatter3(P1(:,1),P1(:,2),P1(:,3), ...
  'MarkerEdgeColor','k',...
  'MarkerFaceColor',[0 .75 .75]);
hold on
scatter3(P2(:,1),P2(:,2),P2(:,3), ...
  'MarkerEdgeColor','k',...
  'MarkerFaceColor',[1 0 0]);
axis equal
```

绕原点旋转