

MATLAB实例：二元高斯分布图

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1. MATLAB程序

```
%% demo Multivariate Normal Distribution
clear
clc

%% 空间坐标范围
x1=-5:0.2:5;
x2=-5:0.2:5;
[X1, X2]=meshgrid(x1, x2);
X=[X1(:) X2(:)];

%% 高斯分布参数
% 分量1
miu_1=[1 1]; % 均值
Sigma_1=[2 -2;-2 3]; % 协方差
% 分量2
miu_2=[0 -2]; % 均值
Sigma_2=[5 0.5;0.5 1]; % 协方差

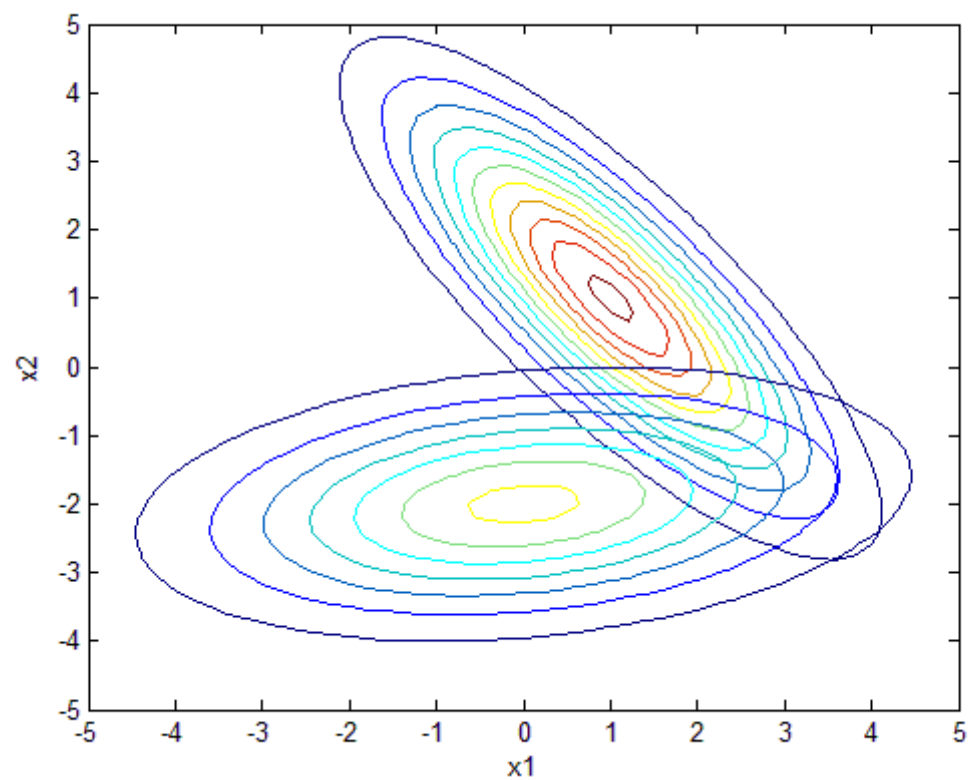
%% 高斯概率密度函数
% 分量1
y_1=mvnpdf(X, miu_1, Sigma_1);
y_1=reshape(y_1, length(x2), length(x1));
% 分量2
y_2=mvnpdf(X, miu_2, Sigma_2);
y_2=reshape(y_2, length(x2), length(x1));

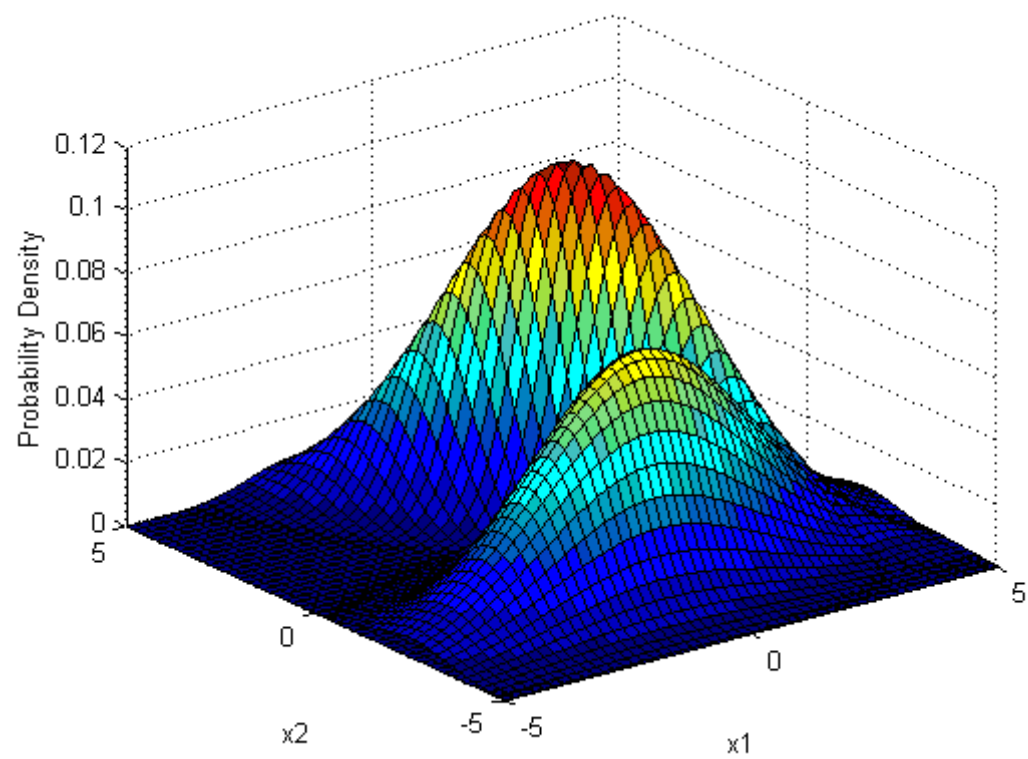
%% 2D密度图
figure(1);
contour(x1, x2, y_1);
hold on
contour(x1, x2, y_2);
xlabel('x1');
ylabel('x2');
saveas(gcf, sprintf('Gauss_2D. jpg'), 'bmp');

%% 3D密度图
```

```
figure(2);  
surf(x1, x2, y_1);  
hold on  
surf(x1, x2, y_2);  
xlabel('x1');  
ylabel('x2');  
zlabel('Probability Density');  
saveas(gcf, sprintf('Gauss_3D. jpg'), 'bmp');
```

2. 结果





参考: [Multivariate Normal Distribution](#)