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In [2]: import numpy as np
import matplotlib.pyplot as plt
from sklearn import datasets
from sklearn.svm import SVC

# 1. Dataset: Zwei konzentrische Kreise erstellen
from sklearn.datasets import make_circles
X, y = make_circles(n_samples=300, factor=0.3, noise=0.05)

# 2. SVM-Modell mit RBF-Kernel erstellen
model = SVC(kernel='rbf', C=1, gamma=0.5)
model.fit(X, y)

# 3. Trennlinie plotten
def plot_decision_boundary(X, y, model):
    x_min, x_max = X[:, 0].min() - 1, X[:, 0].max() + 1
    y_min, y_max = X[:, 1].min() - 1, X[:, 1].max() + 1
    xx, yy = np.meshgrid(np.arange(x_min, x_max, 0.02),
                          np.arange(y_min, y_max, 0.02))

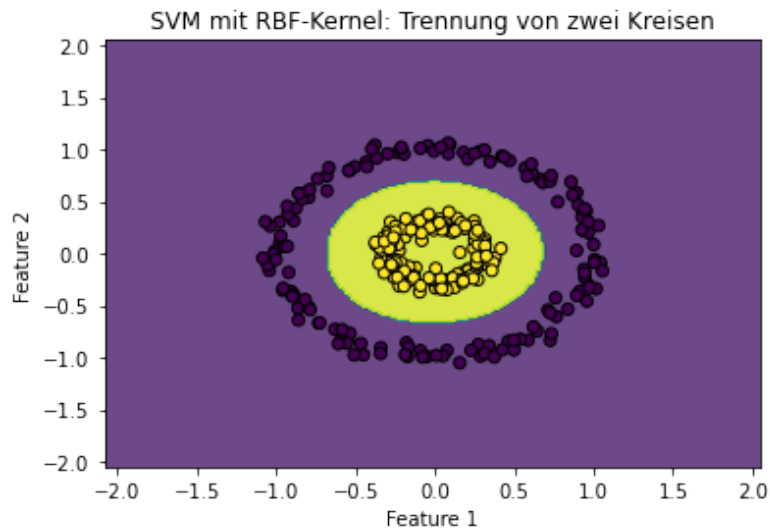
    Z = model.predict(np.c_[xx.ravel(), yy.ravel()])
    Z = Z.reshape(xx.shape)

    plt.contourf(xx, yy, Z, alpha=0.8)
    plt.scatter(X[:, 0], X[:, 1], c=y, edgecolors='k', marker='o')
    plt.xlabel('Feature 1')
    plt.ylabel('Feature 2')
    plt.title('SVM mit RBF-Kernel: Trennung von zwei Kreisen')
    plt.show()

plot_decision_boundary(X, y, model)

# Ausgabe der Support-Vektoren
print('Dies sind die Support-Vektoren:')
print(model.support_vectors_)

```



Dies sind die Support-Vektoren:

```
[ [ 0.75994903 -0.42673195]
  [-0.68084369  0.6011722 ]
  [ 0.27300515 -0.87441484]
  [-0.17981445 -0.85783421]
  [-0.89014452  0.31316565]
  [-0.42954811  0.83216204]
  [-0.92241057 -0.18255156]
  [ 0.34681532  0.88072287]
  [-0.16624549 -0.8995558 ]
  [ 0.20644304  0.90612086]
  [-0.8187437  -0.44446816]
  [ 0.77364475  0.495033 ]
  [ 0.57987299  0.74105502]
  [-0.58422917 -0.73307057]
  [-0.93124125  0.06784145]
  [ 0.71190804 -0.54338435]
  [ 0.89208465  0.02853544]
  [ 0.7248706  -0.57154423]
  [-0.37251473  0.08388621]
  [ 0.24702375  0.31010008]
  [ 0.37940179 -0.0412369 ]
  [-0.28038239  0.3025187 ]
  [ 0.26966648 -0.25236362]
  [-0.22576681 -0.31226992]
  [-0.37669606  0.10697203]
  [ 0.07435784 -0.34896101]
  [-0.32033167 -0.18632038]
  [-0.09653717 -0.37039832]
  [ 0.08756379  0.39600589]
  [ 0.36762004 -0.08975457]
  [ 0.35802183 -0.16424646]
  [-0.1964231  -0.31537766]
  [-0.18348315  0.33320899]
  [ 0.41479614  0.0474152 ] ]
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