

Inverse mapping with automatic differentiation and warm-start, using **opyrability**: *nlp_based_approach*

```
from opyrability import nlp_based_approach

# Initial estimate for inverse mapping, lower/upper bounds.
u0 = np.array([3, 10])
lb = np.array([0.25, 3])
ub = np.array([50, 50])

# DOS Bounds and resolution
DOS_bounds = np.array([[0.1, 0.35],
                       [0.45, 0.65]])
DOS_resolution = [25, 25]

# Obtaining inverse map of the CSTR design
fDIS, fDOS, message = nlp_based_approach(CSTR,
                                         DOS_bounds,
                                         DOS_resolution,
                                         u0,
                                         lb,
                                         ub,
                                         method='ipopt',
                                         plot=True,
                                         ad=True,
                                         warmstart=True)
```

