

```
In[13]:= Needs["IdentifiabilityAnalysis`"]
        startTime = AbsoluteTime[]
```

```
Out[14]= 3.6883641001975584 × 109
```

```
In[15]:= vars = {x1, x2, x3, x4, x5, x6, x7, x8, x9}
```

```
Out[15]= {x1, x2, x3, x4, x5, x6, x7, x8, x9}
```

```
In[16]:= params = {p1, p2, p3, p4, p5, p6, p7}
```

```
Out[16]= {p1, p2, p3, p4, p5, p6, p7}
```

```
In[17]:= sys = {x1'[t] == (p7 * p4 * x9[t]) / p6 - p1 * x1[t] * u1[t],
                x2'[t] == -2 * p2 * x2[t]^2 + p1 * x1[t] * u2[t],
                x3'[t] == p2 * x2[t]^2 - p3 * x3[t],
                x4'[t] == -(p7 * p4 * x4[t] - p6 * p3 * x3[t]) / p7,
                x5'[t] == -p4 * (x5[t] - 2 * x4[t]),
                x6'[t] == p4 * (x5[t] - x6[t]),
                x7'[t] == p4 * (x6[t] - x7[t]),
                x8'[t] == p4 * (x7[t] - x8[t]),
                x9'[t] == p4 * (x8[t] - x9[t]),
                x1[0] == p5, x2[0] == 0, x3[0] == 0, x4[0] == 0,
                x5[0] == 0, x6[0] == 0, x7[0] == 0, x8[0] == 0, x9[0] == 0}
```

```
Out[17]= {x1'[t] == -p1 u1[t] x1[t] +  $\frac{p4 p7 x9[t]}{p6}$ , x2'[t] == p1 u2[t] x1[t] - 2 p2 x2[t]^2,
          x3'[t] == p2 x2[t]^2 - p3 x3[t], x4'[t] ==  $\frac{p3 p6 x3[t] - p4 p7 x4[t]}{p7}$ ,
          x5'[t] == -p4 (-2 x4[t] + x5[t]), x6'[t] == p4 (x5[t] - x6[t]),
          x7'[t] == p4 (x6[t] - x7[t]), x8'[t] == p4 (x7[t] - x8[t]),
          x9'[t] == p4 (x8[t] - x9[t]), x1[0] == p5, x2[0] == 0, x3[0] == 0,
          x4[0] == 0, x5[0] == 0, x6[0] == 0, x7[0] == 0, x8[0] == 0, x9[0] == 0}
```

```
In[18]:= output = {(x2[t] + 2 * x3[t]) / p5, (x1[t] + x2[t] + 2 * x3[t]) / p5;}
```

```
Out[18]= { $\frac{x2[t] + 2 x3[t]}{p5}$ , Null}
```

```
In[19]:= iad = IdentifiabilityAnalysis[{sys, output}, vars, params, t, {u1, u2}]
```

```
Out[19]= IdentifiabilityAnalysisData[False, <>]
```

```
In[20]:= iad["IdentifiableQ"]
```

```
Out[20]= False
```

```
In[21]:= iad["DegreesOfFreedom"]
```

```
Out[21]= 2
```

```
In[22]:= iad["NonIdentifiableParameters"]
```

```
Out[22]= {p6, p7}
```

```
In[23]:= endTime = AbsoluteTime[]  
         N[endTime - startTime]
```

```
Out[23]=  $3.6883641014999065 \times 10^9$ 
```

```
Out[24]= 1.30235
```