① Optimal driving variable ② Forcing parameters ③ Time variable

a

500 data points *550 data points* *600 data points* *650 data points* *700 data points*

Inference inaccuracy (sMAPE)

b

300 data points *350 data points* *400 data points* *450 data points* *500 data points*

Inference inaccuracy (sMAPE)

Basis function library with degree k

Cusp bifurcation

Kuramoto oscillators

c

Bifurcation detection rate

100% 19% 70%

d

Bifurcation inaccuracy (timepoint)

e

Prediction inaccuracy (NED)

f

Interaction: $\sin(\theta_j + \theta_i)$

Prediction inaccuracy (NED)

g

Interaction: $\cos(\theta_j - \theta_i)$

Prediction inaccuracy (NED)