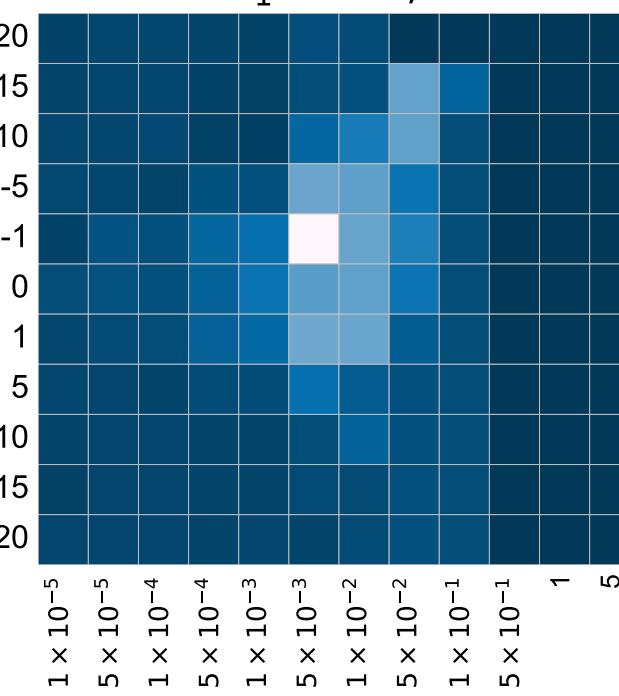


a *Cusp bifurcation*Grid search: $\nu_1 = -1$, $\Delta\nu = 5 \times 10^{-3}$ **b**

True:

$$\dot{x} = \phi_1 + \phi_2 x - x^3$$

$$(\phi_1, \phi_2) : (1, 4) \rightarrow (3, 3)$$

Infer:

$$\dot{x} = (1.4 + 0.4\nu) + (3.8 - 0.2\nu)x - x^3$$

$$\nu : -1 \rightarrow 4$$

c

X

2

-2

0

500

Timepoints

20

15

10

5

0

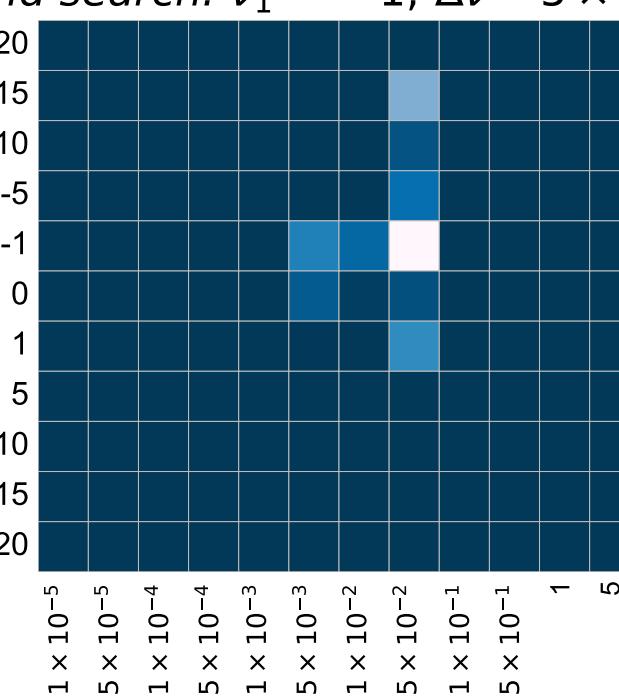
-5

-10

-15

-20

- True
- Prediction
- Training data

True
Prediction
Training data**d** *Kuramoto oscillators*Grid search: $\nu_1 = -1$, $\Delta\nu = 5 \times 10^{-2}$ **e**

True:

$$\dot{\theta}_i = \omega_i + \sigma \sum_{j=1}^N A_{ij} \sin(\theta_j - \theta_i)$$

$$\sum_{i=1}^N \omega_i = 0, \sigma : 0 \rightarrow 1$$

Infer:

$$\dot{\theta}_i = (0.0127 + 0.0202\nu) \sum_{j=1}^N A_{ij} \sin(\theta_j - \theta_i)$$

$$\nu : -1 \rightarrow 49$$

f $\sum |\Delta\theta_i|$

1.2

0

10

500

1000

Timepoints

- True
- Prediction
- Training data

True
Prediction
Training data