

b

True cusp bifurcation dynamics :

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

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



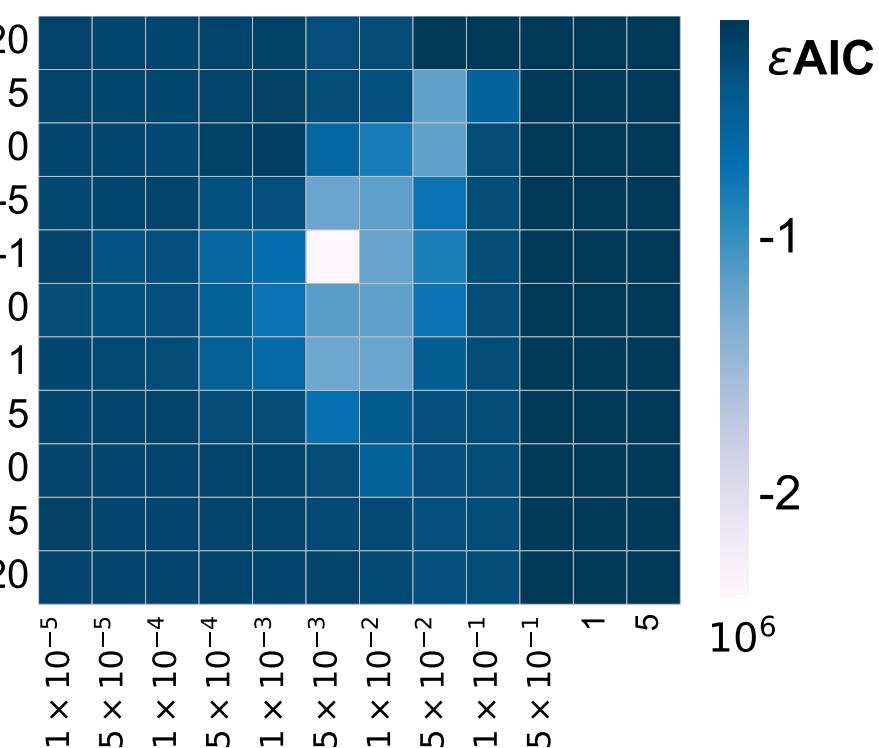
Surrogate model :

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

$$v : -1 \rightarrow 4$$

Grid search result :

$$v_1 = -1, \Delta v = 5 \times 10^{-3}$$



Dynamics prediction

