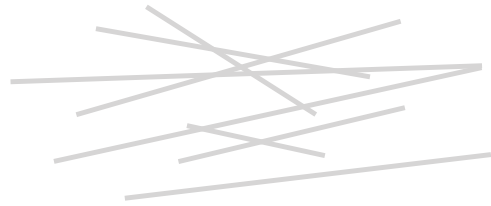


**Competitive suppression of synchronization and nonmonotonic transitions
in oscillator communities with distributed time delay**

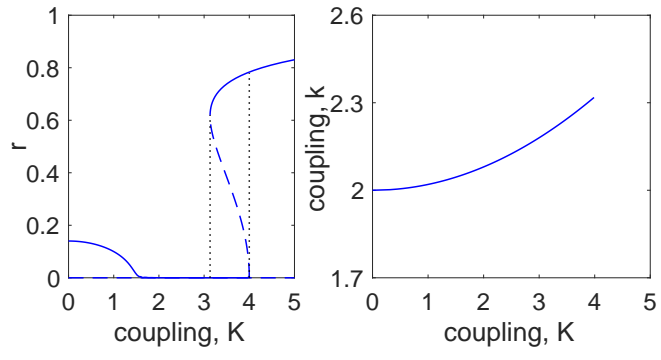
D *A* *M* *S* *S* *B* *C* 80309, *A*
D *M* *C* *H* *C* 06106, *A*





community 1

community 2



$\frac{1}{h} \left(\frac{1}{2} \theta_{i-1} + \theta_i \right) = \frac{1}{h} \left(\frac{1}{2} \theta_{i+1} + \theta_i \right)$,

$$\left(\frac{1}{2} + \frac{1}{2} \right) \bar{w} = \bar{w}, \quad (1)$$

$\frac{1}{h} \left(\frac{1}{2} \theta_{i-1} + \theta_i \right) = \frac{1}{h} \left(\frac{1}{2} \theta_{i+1} + \theta_i \right)$,

$$w = -w, \quad (2)$$

$\frac{1}{h} \left(\frac{1}{2} \theta_{i-1} + \theta_i \right) = \frac{1}{h} \left(\frac{1}{2} \theta_{i+1} + \theta_i \right)$

APPENDIX B: NUMERICAL VALIDATION OF THE LOW-DIMENSIONAL EQUATIONS

The numerical validation of the low-dimensional equations is performed by comparing the results of the full-order model (FOM) with the results of the reduced-order model (ROM). The FOM is solved using a standard finite difference method, while the ROM is solved using a proper orthogonal decomposition (POD) method. The results are compared in terms of the maximum error and the computational time.

$$\theta = \omega + \dots - \theta + K \rho \dots - \theta, \quad (3)$$

$$w = (\dots - w) / \dots, \quad (4)$$

The results show that the ROM is able to accurately capture the essential dynamics of the FOM, while significantly reducing the computational cost. The maximum error between the FOM and the ROM is found to be very small, indicating high accuracy of the ROM.

5 55 5

5

5

1,0 0 (0)