

## **The anticipating synchronization of chaotic systems based on an act-and-wait concept**

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**Abstract:** An anticipating synchronization was introduced for the forecasting of chaotic dynamics. However, the problem of the stability of an anticipation manifold is rather complicated due to the infinite number of Lyapunov exponents caused by a time-delayed feedback term in the response system. To overcome this problem, in this paper we propose to use an act-and-wait concept. If the duration of waiting (when a coupling is switched off) is larger than a feedback delay, the problem of the stability of the anticipation manifold becomes easier due to the finite number of Lyapunov exponents. To simplify the coupling scheme, the single output of a response and the single input for a drive system is used. As a result, the stable synchronization regime with a considerably large time of anticipation is achieved. The results are demonstrated with the Roessler and Chua systems.

**Keywords:** anticipating synchronization, act and wait control, delay systems.