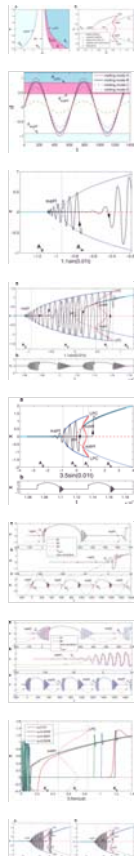


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### Hopf-bifurcation-delay-induced bursting patterns in a modified circuit system

Xiujing Han<sup>a,\*</sup>, Fubing Xia<sup>a</sup>, Peng Ji<sup>b,c</sup>, Qinsheng Bi<sup>a</sup>, Jürgen Kurths<sup>b,c</sup>[Show more](#)

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- Two novel Hopf-bifurcation-delay-induced bursting patterns are presented.
- Two factors have been identified as playing decisive roles in the generation of the delay-induced bursting patterns.
- Our results enrich the routes to bursting as well as the underlying mechanisms of bursting.

**Abstract**

Based on Hopf bifurcation delay, we present two novel delay-induced bursting patterns in a modified van der Pol-Duffing circuit system. These delay-induced bursting patterns are classified as compound “delayed supHopf/fold cycle-subHopf/supHopf” bursting and “subHopf/supHopf” bursting via “delayed supHopf/supHopf” hysteresis loop, respectively. Our results show that Hopf bifurcation delay plays a decisive role in the generation of these two bursting patterns, which enriches the routes to bursting and deepens the understanding of underlying mechanisms of bursting.

**Keywords**

Hopf bifurcation delay; Compound “delayed supHopf/fold cycle-subHopf/supHopf” bursting; “SubHopf/supHopf” bursting via “delayed supHopf/supHopf” hysteresis loop

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