

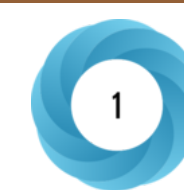
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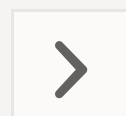
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Life and death saddles in the heart

Zhaoyang Zhang and Zhilin Qu
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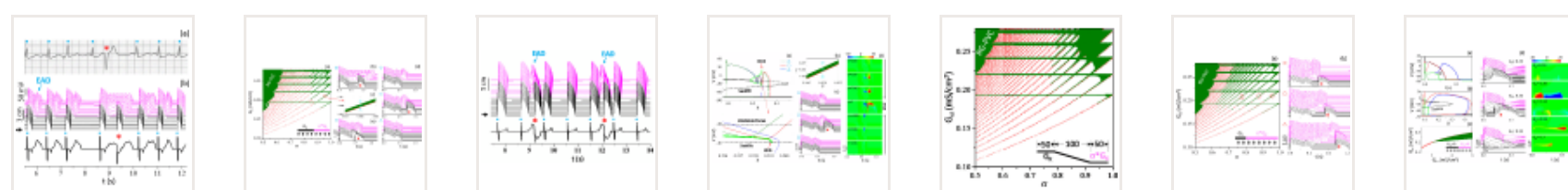


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ABSTRACT

Saddle points are responsible for threshold phenomena of many biological systems. In the heart, saddle points determine the normal excitability and conduction, but are also responsible for certain abnormal action potential behaviors associated with lethal arrhythmias. We investigate the dynamical mechanisms for the genesis of lethal extra heartbeats in heterogeneous cardiac tissue under two diseased conditions. For both conditions, the lethal events occur when the system is close to the saddle point, implying the pivotal role of the saddle point in cardiac arrhythmogenesis.



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Research Areas

- Action potential propagation
- Cardiac dynamics
- Interdisciplinary Physics
- Biological Physics

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