

Abstract Submitted
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The Dynamics of Small Excitable Systems¹ PETER JUNG, Ohio University, JIAN-WEI SHUAI, University of California, Irvine — We consider clusters of sodium ion channels similar as found in the nodes of Ranvier in myelinated neurons. The cluster behaves like excitable systems in the limit of large numbers of ion channels. Small clusters of channels, i.e. *small excitable systems*, exhibit spontaneous action potentials. We show that *small* excitable systems exhibit maxima of the spontaneous firing rate and of the response to external stimuli at multiple specific cluster sizes that are universally determined by arithmetic properties of small numbers.

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