Dynamics of a free boundary problem arising from excitable systems

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In this talk we consider the singular limit problems arising from FitzHugh-Nagumo type model, which is a free boundary problem. The singular limit problem of FHN system has been studied by many authors. This system in this talk is a simplified one and it is easy to be handled. Actually the existence of the two-dimensional traveling spots have been shown by Y.-Y. Chen et al. In this talk I mainly focus on the dynamics of this system on one-dimensional space. We show that the solution converges to the traveling pulses or the traveling fronts. More precisely, under some assumptions of the initial data, we can show that solutions can be represented by the sum of several moving pulses and fronts whose speeds converge to one of traveling pulse.