

Global Carleman estimate for stochastic monodomain equation in cardiac electrophysiology

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Abstract

We addressed to proving a new Carleman estimate for stochastic monodomain equation coupled with stochastic differential equation described the dynamic of cellular membrane in the heart. By means of this Carleman estimate, we establish the conditional stability for such coupling system in terms of some suitable norms revealing the stochastic property of their governed system. We prove the conditional stability for our inverse problem for the applied current with a suitable observations acting in a sub-domain of the heart and some measurement at fixed time t_0 .