## Effect of buffers with multiple binding sites on calcium waves

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The existence and properties of intracellular waves of increased free cytoplasmic calcium concentration (calcium waves) are strongly affected by the binding and unbinding of calcium ions to a multitude of different buffers in the cell. These buffers can be mobile or immobile and, in general, have multiple binding sites that are not independent. Previous theoretical studies have focused on the case when each buffer molecule binds a single calcium ion. In this study we analyse how calcium waves are affected by calcium buffers with two non-independent binding sites, and show that the interactions between the calcium binding sites can result in the emergence of new behaviours. In particular, for certain combinations of kinetic parameters, the profiles of buffer molecules with one calcium ion bound can be non-monotone.

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