

The surface finite element method for pattern formation on evolving biological surfaces

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Outline

1 Background

2 Numerical Results

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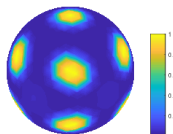
1 Background

2 Numerical Results

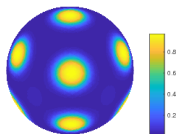
Efficiency of the Numerical Method

Table: $\chi N = 30, f = 0.2, \Gamma = 2.9$.

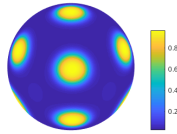
# of Node	# of Elem.	Γ	Γ -diff.	Hamiltonian	Ham. diff.
162	320	-	-	-	-
642	1280	3.7071	8.071e-1	-3.172693	-
2562	5120	3.5786	1.285e-1	-3.160542	1.215e-2
10242	20480	3.5656	1.129e-2	-3.165431	4.889e-3
40962	81920	3.5632	2.399e-3	-3.166846	1.415e-3



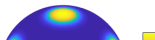
(a)



(b)



(c)



Previous and Our Work

- Many numerical methods of the SCFT model have been developed on flat spaces, however, only few work focus on designing the numerical methods on curved surfaces ([Chantawansri et al. 2007], [Li, Liang et al. 2014], [Li et al. 2006, 2014], etc).
- We develop a computational method of self-assembled phases of block copolymers on a general curved surface based on the self-consistent field theory (SCFT), which is discretized by the surface finite element method.

Thank you!