What exists:

1. Reaction (published)
   - Markov rxns -- stochastic
   - MCMC rxns -- St
   - Analytical soln (ODEs) – deterministic
   - Stochastic ODEs – St
   - *No space*

2. Diffusion
   - Finite difference (nodal/spatial) – Det
   - Random walk (nodal/spatial) – St
   - TODO: Multinomial Markov random walk (nodal) – St
   - Eigenmode solution (modal/spectral) – Det
   - Eigenmode Markov model (modal/spectral) – St
     o TODO: expand to 100 spatial locations (1)
   - TODO: tube diffusion in MCell as ground truth comparison

3. Reaction-Diffusion
   - Finite difference + rxns (nodal/spatial) – Det
   - TODO: Random walk + rxns (nodal/spatial) – St (2)
     o *Alternating between 1. across species for each node and 2. across nodes for each species*
   - Eigenmode soln + rxns (modal/spectral) – Det
   - TODO: EigenMarkov + rxns (modal/spectral) – St (3)
     o *Alternating between 1. across species for each mode and 2. across modes for each species*
   - TODO: tube rxn-diffusion in MCell as ground truth comparison
   - *Bio complexity: 1d, VDCC point source, 2-state calbindin buffer, calcium, SNARE as observation point*
     o TODO: VDCC as rxn point process (no nodes/modes)? (*time dependent*)
     o TODO: calbindin 9 states (*time dependent*)

Next next next:
   - Run on actual synaptic geometry in Blender with same bio complexity as 3.
   - SNARE kinetics
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