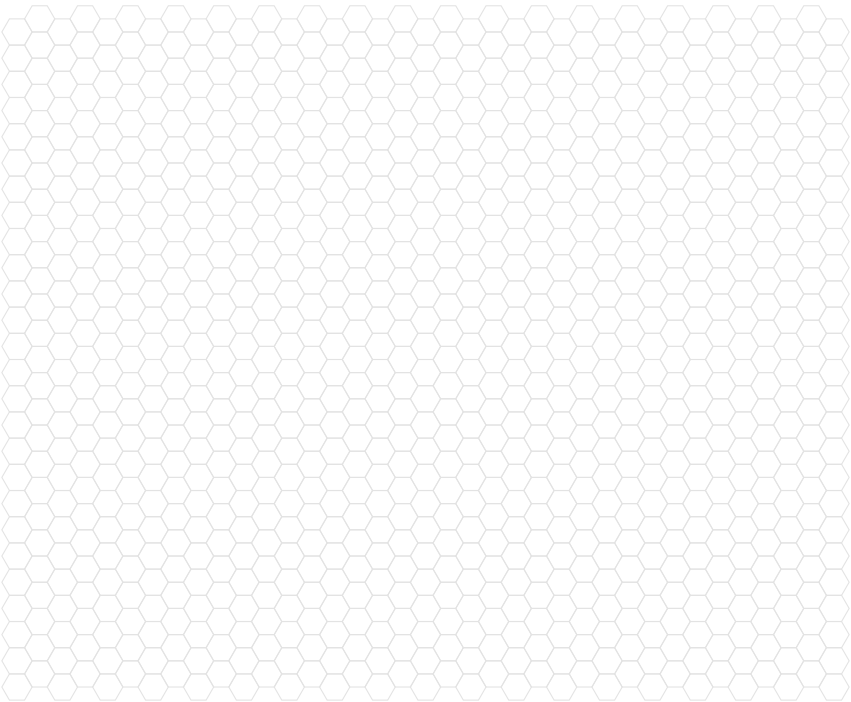


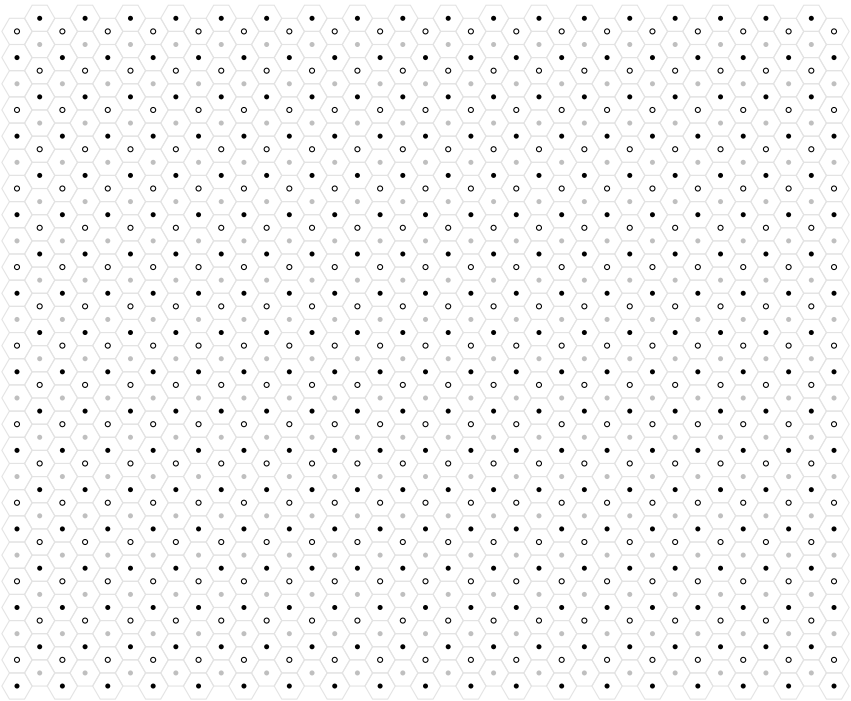
The Loop $O(n)$ Model

Illustration of proof

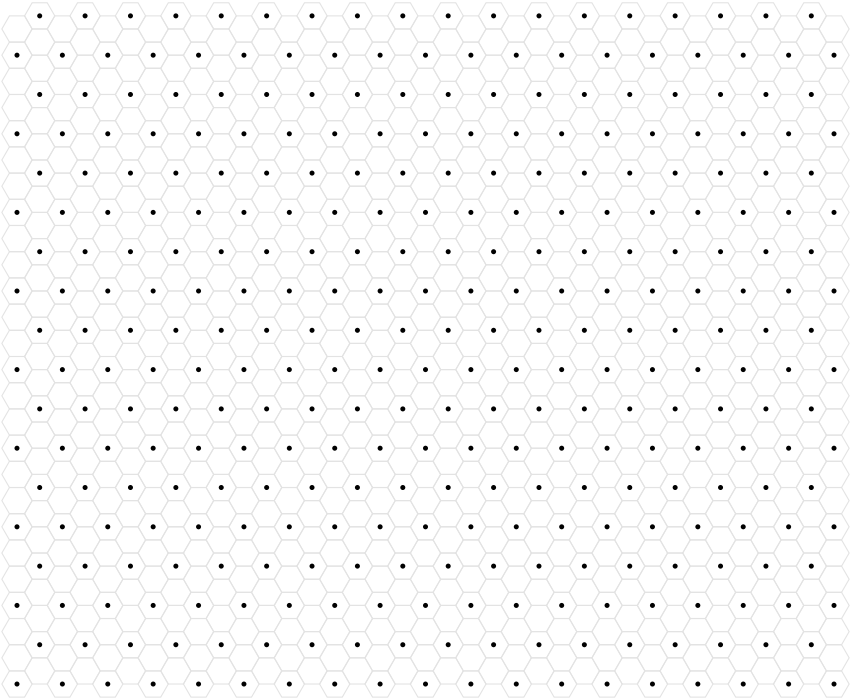
The hexagonal lattice



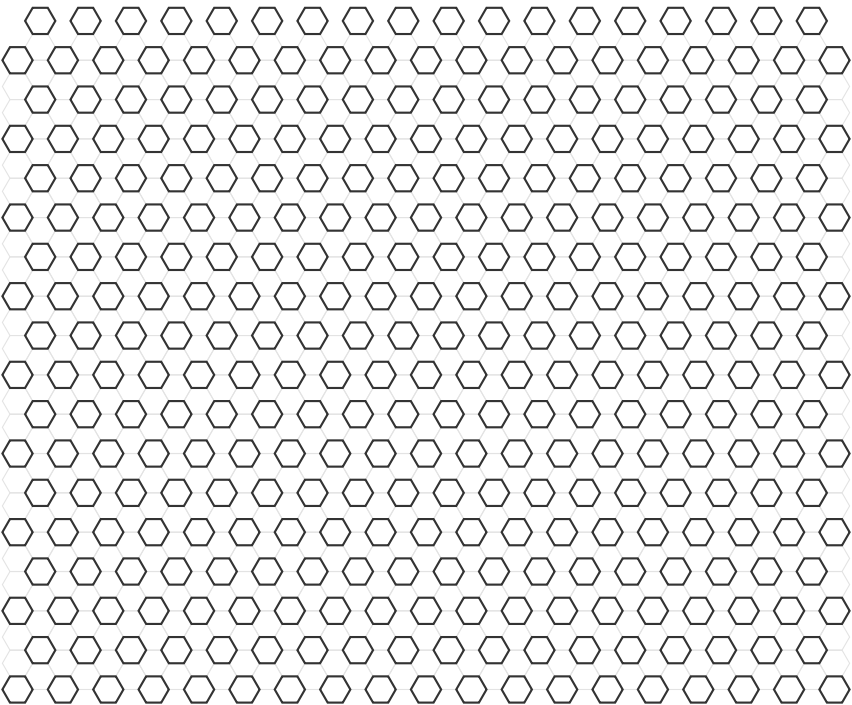
The 3 classes of hexagons (vertices of the triangular lattice)



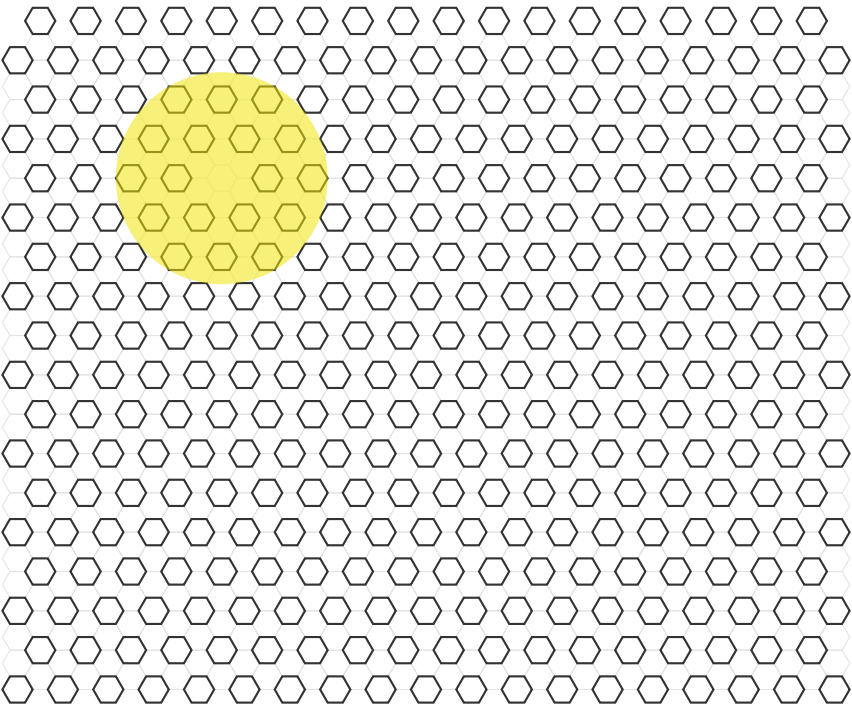
The 0 class hexagons



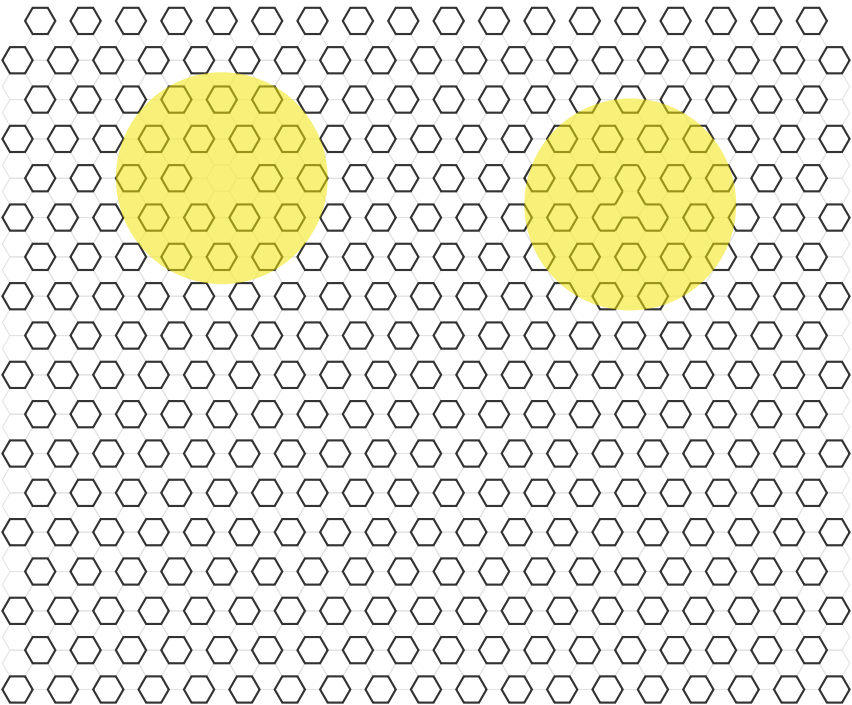
The 0-phase ground state



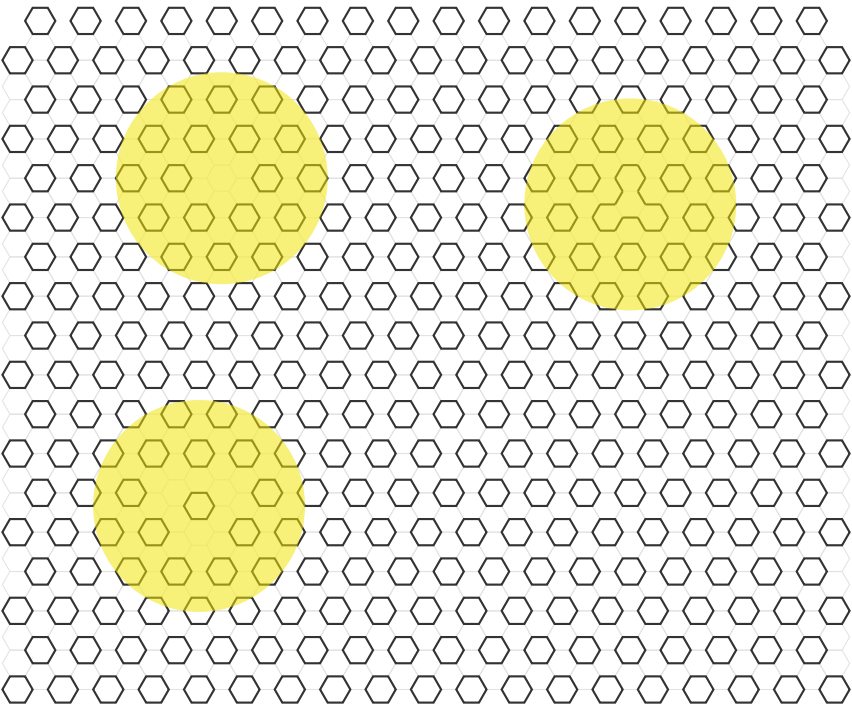
Simple deviations from the ground state



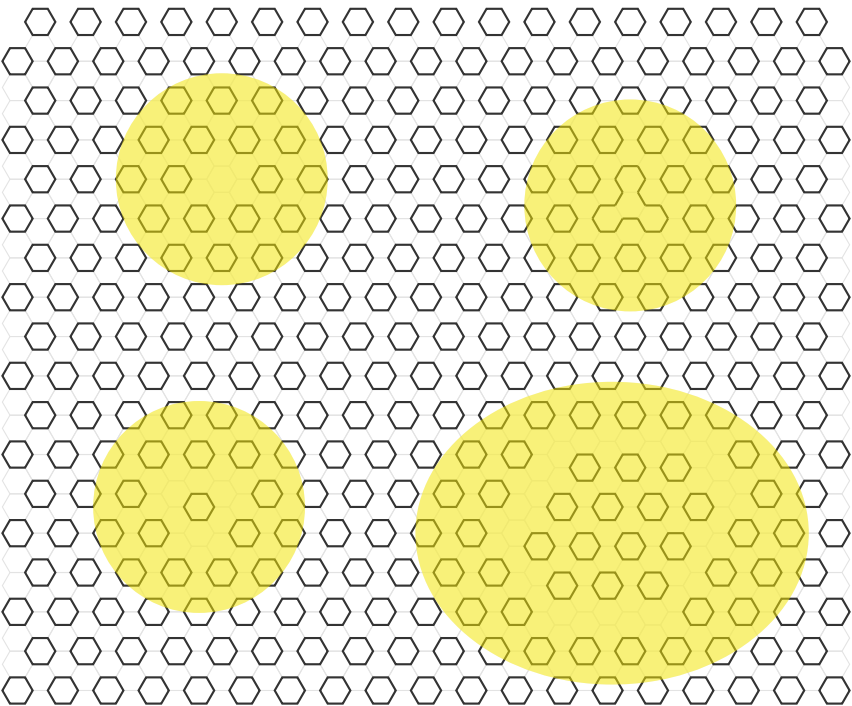
Simple deviations from the ground state



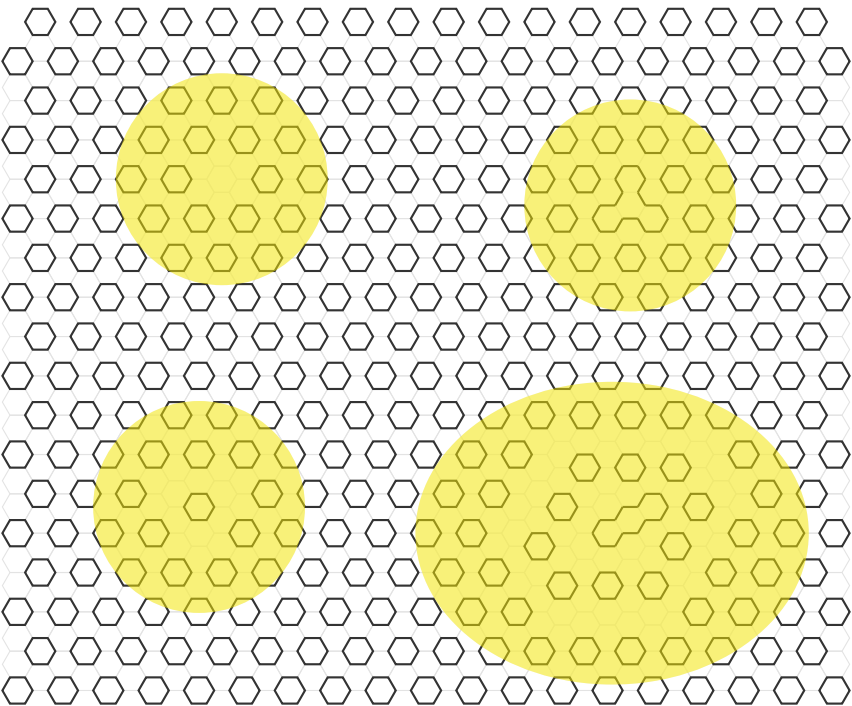
Simple deviations from the ground state



Simple deviations from the ground state



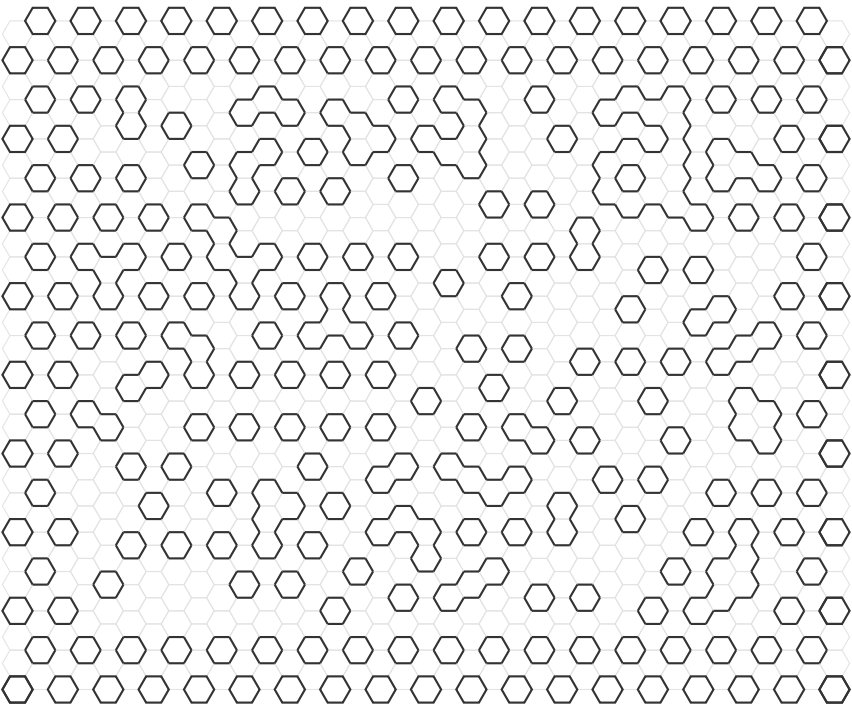
Simple deviations from the ground state



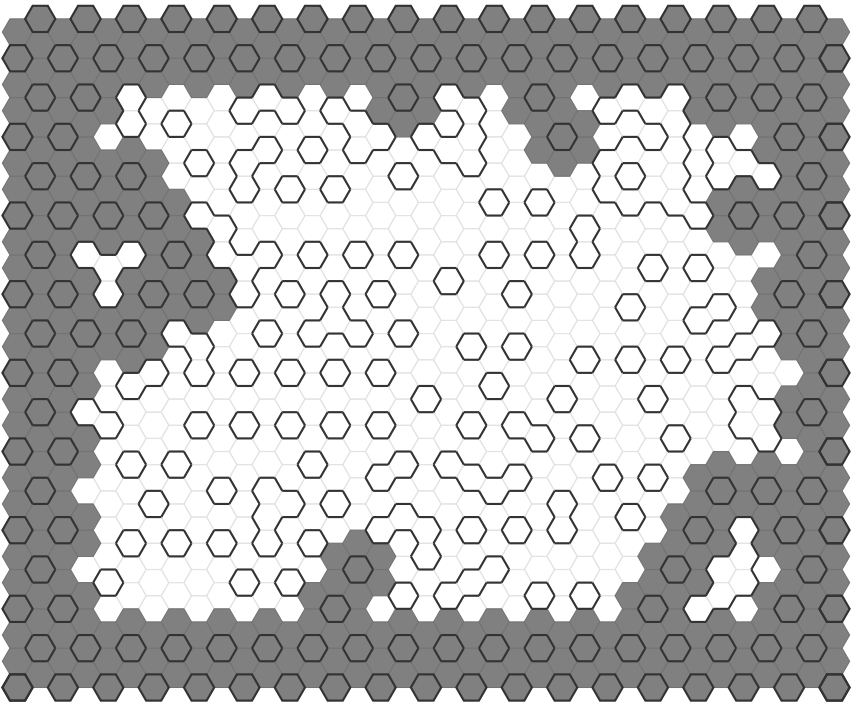
The Repair Transformation

Putting it all together

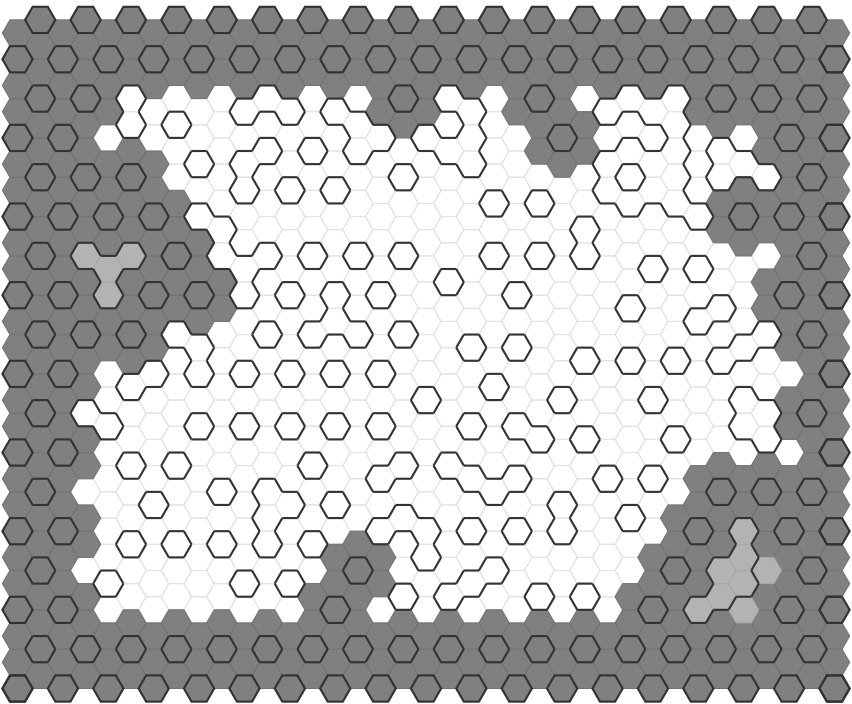
A random loop configuration



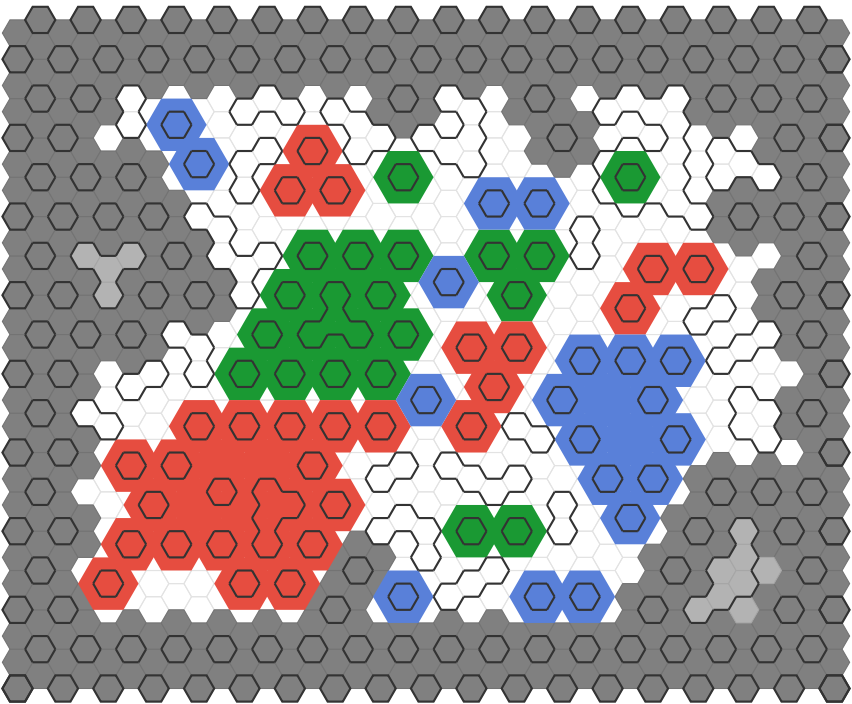
The outer ground state component



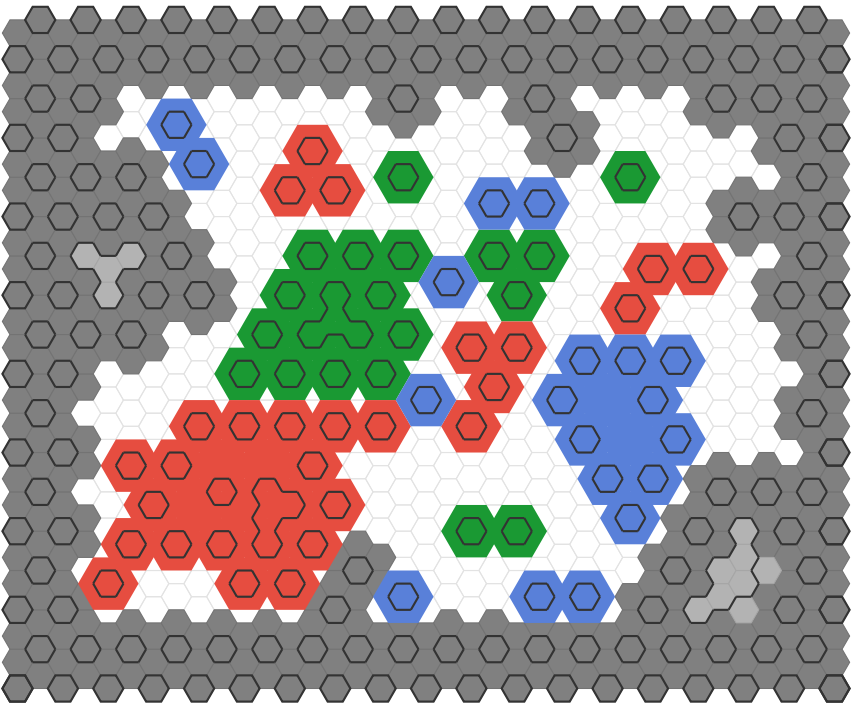
The breakup of the origin



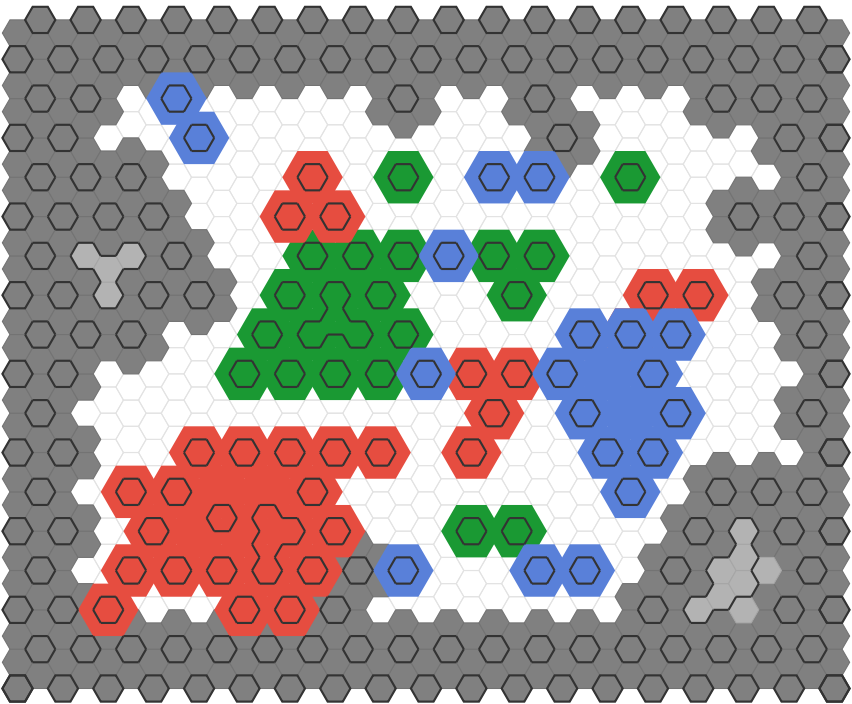
Detecting clusters within the breakup



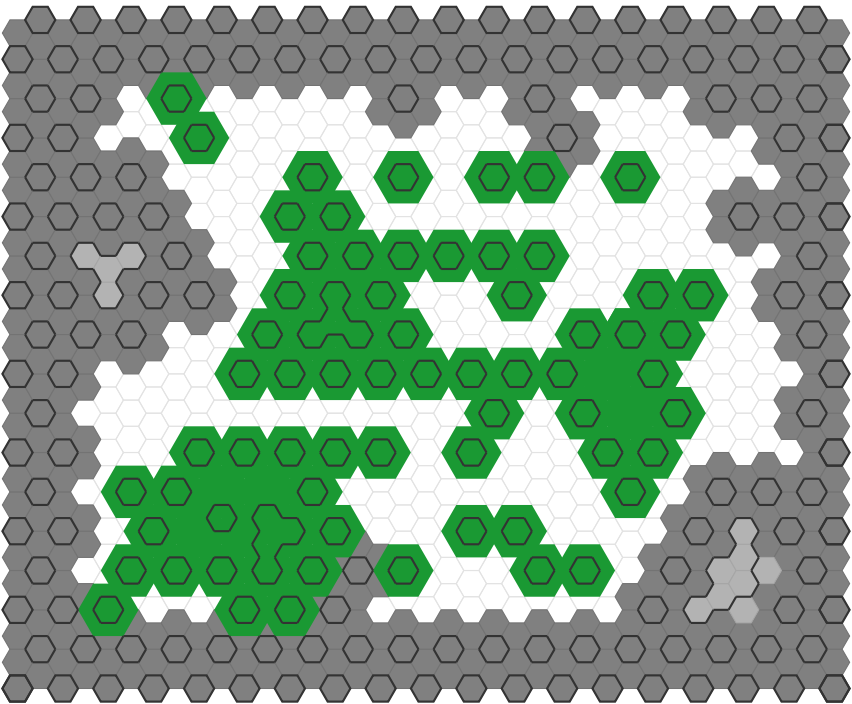
Removing edges outside of clusters



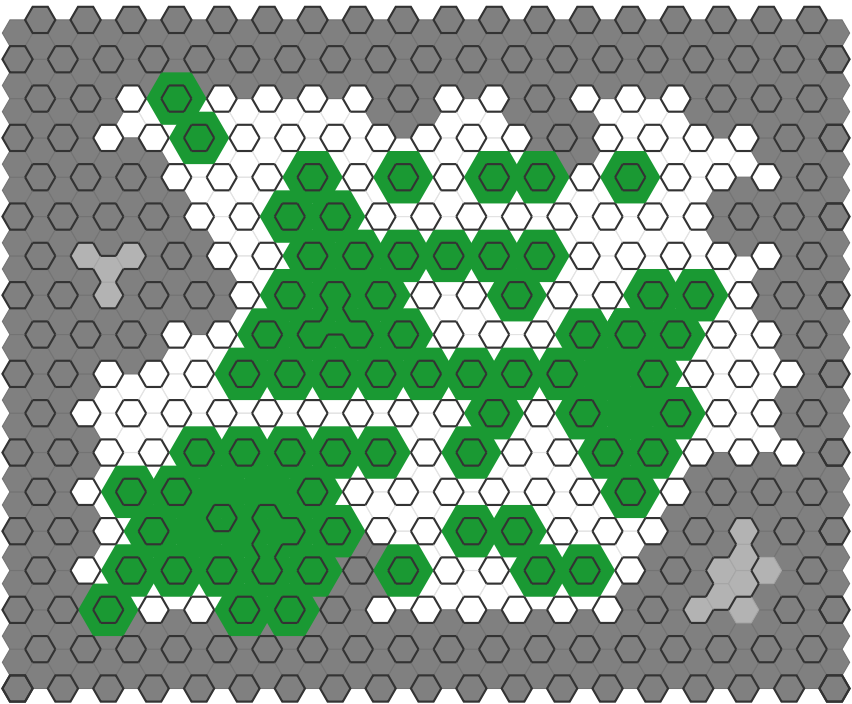
Shifting clusters into the 0 phase



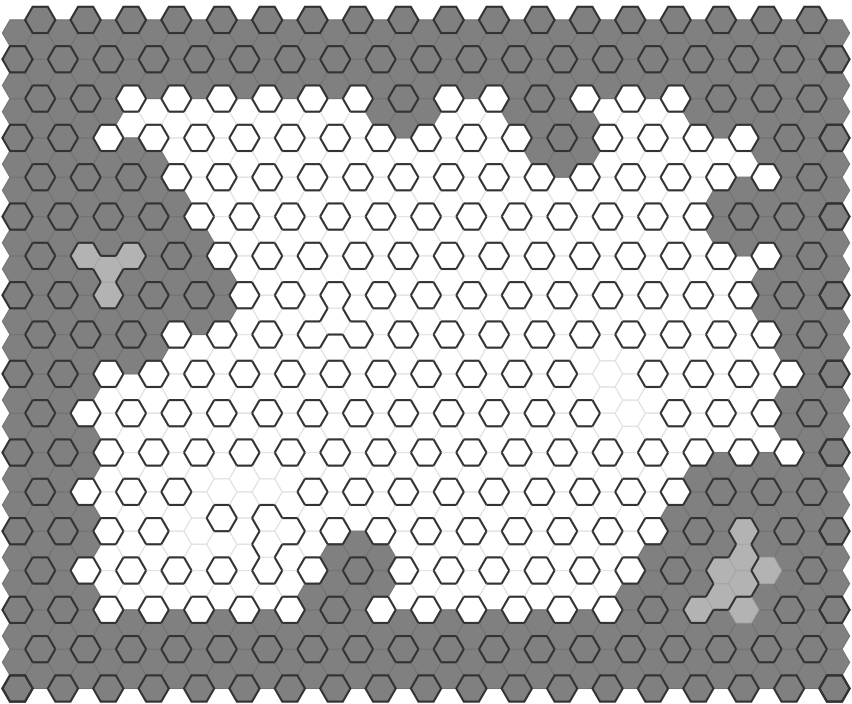
Region outside shifted clusters is now compatible with 0 phase



Restoring 0-phase ground state outside of shifted clusters



Final loop configuration



Final loop configuration

