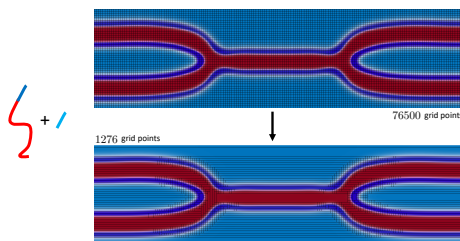




# Adaptive Mesh in Polymer Field Theory

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- Polymers mixtures self-assemble into technologically and biologically useful structures. These include materials as diverse as thermoplastic elastomers and biological cell membranes. In order to understand this self-assembly, we use polymer field theories, such as self-consistent field theory.
- Some interesting structures involve large uniform regions combined with small regions where the density varies rapidly. Current techniques treat these the same, representing the field on a grid with equal resolution everywhere.
- Adaptive techniques have been developed in other areas of physics, such as fluid dynamics, that employ a grid of varying resolution, to resolve fine details where necessary without wasting computer resources on less interesting regions.
- **Your Task:** Adapt polymer field theory simulations to use adaptive mesh techniques.
- You will gain experience conducting polymer simulations, exposure to high-performance computing soft- and hardware and collaboration with an international team.



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