

Questions for project

January 23, 2026

1. Under what assumptions on f, g, v, D does a weak solution exist?
2. When is the solution unique
3. What regularity can be expected?
4. How do small diffusive terms affect well-posedness?
5. When do FE discretizations fail under advection-dominated schemes?
6. Stabilization techniques to recover accuracy?
7. Verify numerical methods converge to analytical solutions.
8. How does advection influence spatial structure?
9. Explain consequences of advection-dominated reactions.