Physics-informed neural networks approach for solving Gray-Scott systems

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A physics-informed neural network (PINN) is employed to approximate the solution of nonlinear partial differential equation systems. In this talk, we present an approach for solving different configurations for the Gray-Scott, a reaction-diffusion system that involves an irreversible chemical reaction between two reactants. Computational results show that the PINN can successfully provide an approximated solution in a variety of conditions, also reproducing the characteristic Turing patterns in the unstable region of the model's parameter space, through a supervised approach that relies on a finite difference method (FDM).

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References

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