## Stability Preserving Finite Difference Scheme for Growth Model

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In this paper we design and analyse stability-preserving nonstandard finite difference schemes based on the theta-methods. The non-standard schemes were found to preserve the stability properties of the growth equation while the standard schemes and schemes with conventional denominator function exhibit a considerable level of numerical instability. Their elementary stability is established theoretically and is also supported by numerical examples.

## References

- R. Anguelov, P. Kama and J.M.-S. Lubuma, Nonstandard theta method and related discrete schemes for the reaction-diffusion equation, In: T.E. Simos (editor), Proceedings of the International Conference of Computational Methods in Sciences and Engineering, World Scientific, Singapore, 2003, 1 24-27.
- [2] R.E. Mickens, Nonstandard nite difference models of differential equations,, World Scientific, Singapore, 1994.