Non linear approximation techniques

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Interpolation and approximation techniques play a fundamental role in numerical analysis, particularly in problems involving discontinuities and sharp gradients. The Weighted Essentially Non-Oscillatory (WENO) method has emerged as a powerful tool for high-order accurate approximations in problems governed by hyperbolic partial differential equations (see, e.g. [2]). This minisymposium focuses on recent advances in nonlinear interpolation and approximation using WENO schemes (see, e.g. [1]) including their theoretical foundations, algorithmic developments, and applications in computational fluid dynamics, image processing, and scientific computing. We welcome contributions on novel WENO formulations, adaptive strategies, and their integration with machine learning approaches. The aim is to foster discussion on the latest trends and challenges in high-order numerical methods for complex systems.

Speakers

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References

[1] P. Mulet, J. Ruiz, C.W. Shu, D. F. Yáñez, (2024): "A non-separable progressive multivariate WENO-$2r$ point value", *App. Numer. Math., 204*.

[2] C.-W. Shu, (1999): "High Order Weighted Essentially Nonoscillatory Schemes for Convection Dominated Problems", *SIAM Review*, 51(1).