

Abstract ID : 5

Convergence rate analysis and improved iterations for numerical radius computation

Content

For the discrete-time dynamical system $x_{k+1} = Ax_k$, the spectrum of $A \in \mathbb{C}^{n \times n}$ tells us about the asymptotic behavior of the system, but it often does not capture information about the transient behavior. To assess this, i.e., how large may $\|A^k\|_2$ become for intermediate values of k , we must turn to other quantities. One possibility is the numerical radius, which is the modulus of a globally outermost point in the field of values of a matrix. In this talk, we consider two very different existing approaches to computing the numerical radius, and via new analyses, show that it actually better to combine them in a new hybrid algorithm compared to using either by itself.

Primary author: Dr MITCHELL, Tim (Max Planck Institute for Dynamics of Complex Technical Systems)

Presenter: Dr MITCHELL, Tim (Max Planck Institute for Dynamics of Complex Technical Systems)

Status: SUBMITTED

Submitted by **Dr MITCHELL, Tim** on **Thursday, January 27, 2022**