

A note on a faster fixed point iterative method

Krushnachandra Panigrahy¹ and Debasisha Mishra¹

¹National Institute of Technology Raipur

June 6, 2020

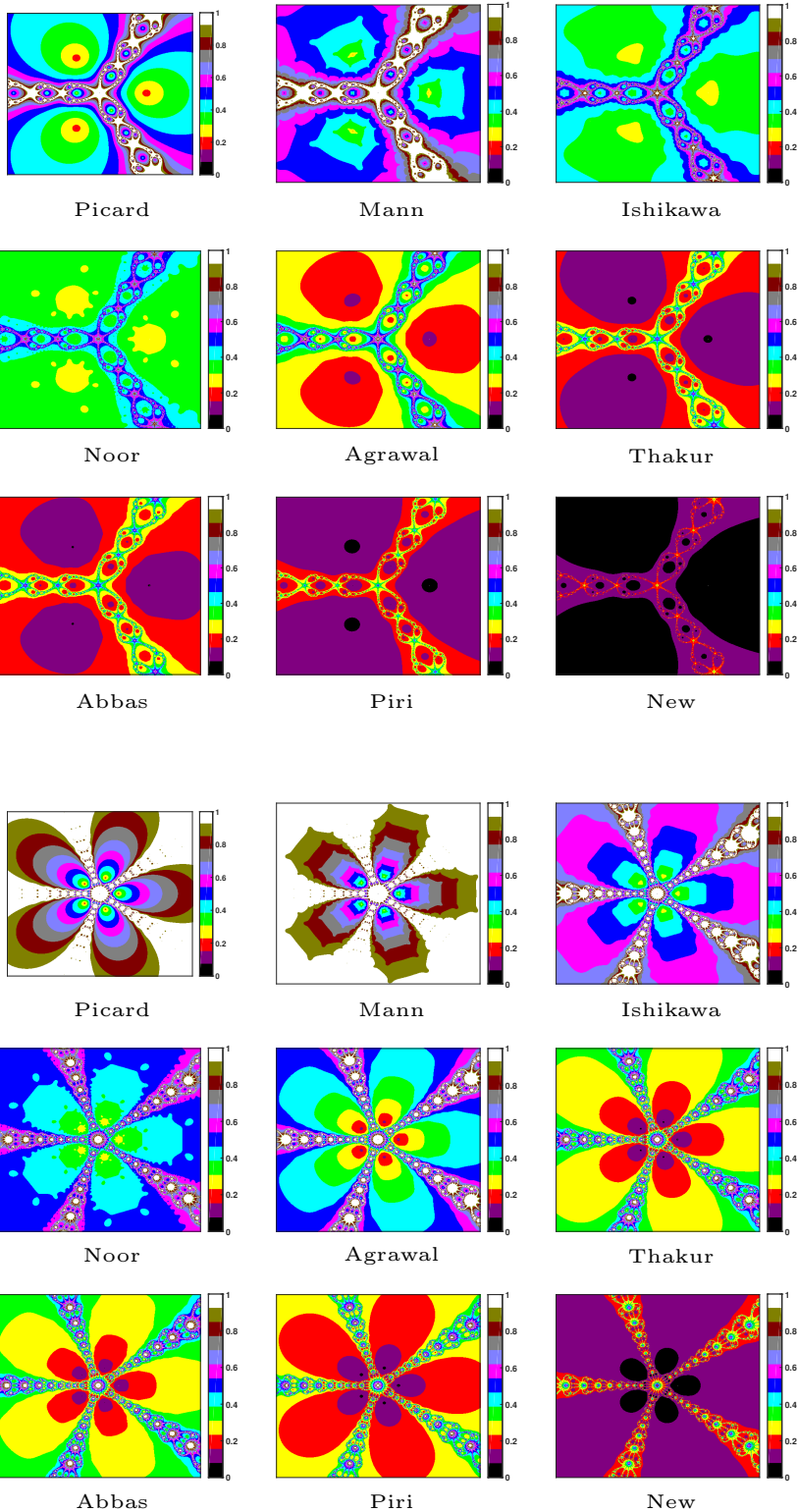
Abstract

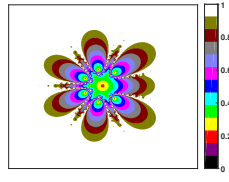
In this paper, we introduce an iteration process to approximate a fixed point of a contractive self-mapping. The comparison theorem indicates that our iteration process is faster than the other existing iteration processes in the literature. We also obtain convergence and stability theorems of this iterative process for a contractive self-mapping. Numerical examples show that our iteration process for approximating a fixed point of a contractive self-mapping is faster than the existing methods. Based on this process, we finally present a new modified Newton-Raphson method for finding the roots of a function and generate some nice polynomiographs.

Hosted file

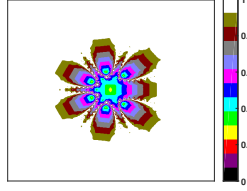
Mathematical_Methods_in_the_Applied_Sciences-1.pdf available at <https://authorea.com/users/330630/articles/457418-a-note-on-a-faster-fixed-point-iterative-method>

figures/comparison-graph2/comparison-graph2-eps-converted-to.pdf

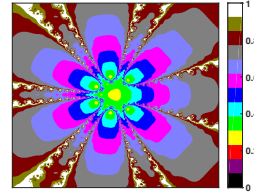




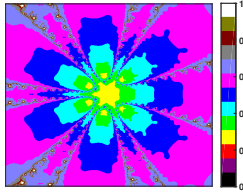
Picard



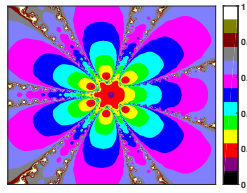
Mann



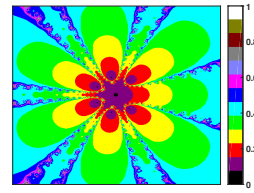
Ishikawa



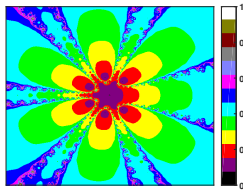
Noor



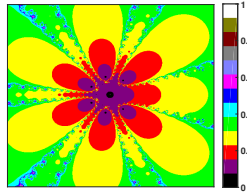
Agrawal



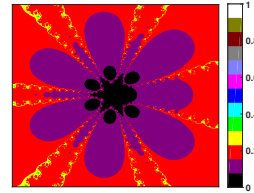
Thakur



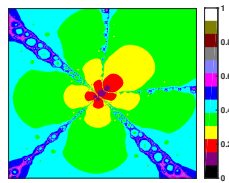
Abbas



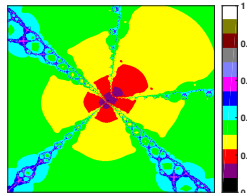
Piri



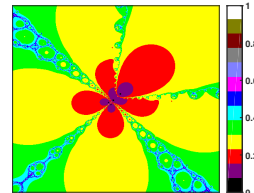
New



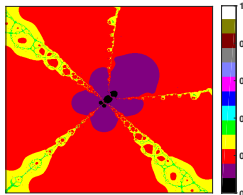
Piri $\alpha = \beta = 0.55$



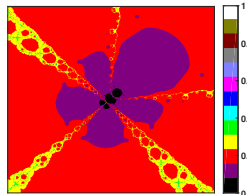
Piri $\alpha = \beta = 0.77$



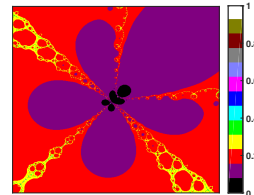
Piri $\alpha = \beta = 0.99$



New $\alpha = \beta = \gamma = 0.55$



New $\alpha = \beta = \gamma = 0.77$



New $\alpha = \beta = \gamma = 0.99$

