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A NOTE ON HERMITE-FEJÉR INTERPOLATION ON THE NON-UNIFORM NODES OF THE UNIT CIRCLE

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Abstract: This paper deals with the Hermite-Fejér interpolation problem on the unit circle with the nodal system containing the vertically projected zeros of Jacobi's polynomial with boundary points on the unit circle. We worked upon three nodal structures throughout this paper and obtained rate of convergence for each case. Moreover, we did a comparison of all the three cases and provided some important conclusions.

Keywords and Phrases: Interpolation, non-uniform nodes, Jacobi Polynomial, Rate of Convergence, Hermite-Fejér.

2020 Mathematics Subject Classification: 41A10, 41A05, 30E10.

1. Introduction

The study of Hermite-Fejér interpolation has drawn interest of many researchers in past years and has been a subject of investigation for a quite long time. Earlier in 1974, [Saxena 12] showed Hermite-Fejér interpolation process for the function on the nodes given in the paper of [Berman 3], converged uniformly to function in [-1,1]. [Daruis and Gonzalez-Vera 9] in 2001 extended Fejér's classical result onto the unit circle and studied the convergence of Hermite-Fejér interpolation polynomial by using Laurent polynomial.

After a decade, in 2011 [Berriochoa et al. 4] came out with some improvements to the Hermite-Fejér interpolation on the unit circle. In another paper, [Berriochoa et al. 5] dealt with the order of convergence of the Laurent polynomial of