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FIXED POINT APPROXIMATION USING UNIFIED ITERATION SCHEME FOR ASYMPTOTICALLY NONEXPANSIVE MAPPINGS IN $CAT(0)$ SPACES

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Abstract: In the present paper, we focus on reexamination of unified three step iteration scheme in more general infinite-dimensional manifolds i.e. in geodesic $CAT(0)$ spaces for asymptotically non-expansive mappings. The findings hold true for both asymptotically non-expansive type mappings and asymptotically quasi nonexpansive mappings. Since, numerous iteration schemes have been introducing for so long and also claimed new and different from other which shows huge lacking of existing iteration based literature. It is to be noted that there are several iteration schemes which are claimed to be different and unique but is special case of some existing scheme. Our results improve the existing iteration scheme based literature.

Keywords and Phrases: $CAT(0)$ spaces, asymptotically nonexpansive mappings, fixed points, unified iteration, $\Delta-$convergence, strong convergence.

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1. Introduction and Preliminaries

A metric space $(\mathfrak{C}, \mathfrak{d})$, that is geodesically connected with the property that every geodesic triangle in $\mathfrak{C}$ is at least as thin as its comparison triangle in the