KRASNOSELSKIJ-BROWDER TECHNIQUE OF ENRICHMENT
OF NONLINEAR OPERATORS AND FIXED POINTS

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Abstract. In a series of very recent papers, the author [2], [3] and his collaborator [4], [5], [6], [7], have used the technique of enrichment of contractive type operators by Krasnoselskij averaging, introduced in [3], to extend some well known classes of operators. Thus, there were introduced and studied the following classes of operators: *enriched nonexpansive operators*, in Hilbert spaces [3]; *enriched contractions* [5], the *enriched Kannan operators* [4] and the *enriched Chatterjea operators* [7], in Banach spaces.

We illustrated the richness of the new classes of mappings by means of appropriate examples. In [3] we have shown, amongst other important facts, that the class of enriched nonexpansive mappings includes all nonexpansive mappings and is independent of the class of quasinonexpansive mappings (which includes all non- expansive mappings possessing fixed points). It also includes all Lipschitzian and generalized pseudocontractive mappings. On the other hand, enriched contractions include some nonexpansive or Lipschitzian mappings.

Our results in the papers [2], [3], [4], [5], [6], [7], established in Hilbert spaces or Banach spaces, extend many important classical fixed point theorems in literature, e.g, the classical convergence theorems established by Browder and Petryshyn in [8]. The main aim of the presentation is to survey the above mentioned results and indicate some further developments.

References

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