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## SOME APPLICATIONS OF FIXED POINT THEOREMS IN THE THEORY OF GENERALIZED ITERATED FUNCTIONS SYSTEMS

We introduce the notion of GIFS, which is a finite family of functions  $f_k : X^m \rightarrow X$ , where  $(X, d)$  is a metric space,  $k \in \{1, 2, \dots, n\}$  and  $m, n \in \mathbb{N}$ . In case that  $(X, d)$  is a compact metric space and the functions  $f_k$  are contractions, we prove the existence of the attractor of such a GIFS and its continuous dependence in the  $f_k$ 's. Moreover, in case that the functions  $f_k$  are Lipschitz contractions, we prove again the existence of the attractor of such a GIFS and explore its properties (among them we give an upper bound for the Hausdorff-Pompeiu distance between the attractors of two such GIFSs, an upper bound for the Hausdorff-Pompeiu distance between the attractors of such a GIFS and an arbitrary compact set of  $X$  and we prove its continuous dependence in the  $f_k$ 's). Finally we present an example which shows that the notion of GIFS is indeed a generalization of the classical notion of IFS.

### References

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