New Contributions to Fractal Interpolation Theory

Cristina Maria Păcurar *
joint work with
Radu Miculescu † and Alexandru Mihail ‡

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Abstract

We present a new fractal interpolation scheme. More precisely we consider $a, b \in \mathbb{R}$, $a < b$, $A \subseteq \mathbb{R}$ such that $\{a, b\} \subseteq A = \overline{A} \subseteq [a, b]$ and $\overset{\circ}{A} = \emptyset$ and prove that for every continuous function $f : A \to \mathbb{R}$ there exist a continuous function $g^* : [a, b] \to \mathbb{R}$ such that $g^*_{|A} = f$ and a possible infinite iterated function system whose attractor is the graph of g^* . If A is finite we obtain the classic Barnsley's interpolation scheme and for $A = \{x_n \mid n \in \mathbb{N}\} \cup \{b\}$, where $x_1 = a$, $\lim\limits_{n\to\infty} x_n = b$ and $x_n \in [a, b]$ for every $n \in \mathbb{N}$, we obtain a countable scheme due to N. Secelean. Our interpolation scheme permits A to be uncountable as it is the case of Cantor ternary set.

*Faculty of Mathematics and Computer Science, Transilvania University of Braşov, Iuliu Maniu Street, nr. 50, 500091, Braşov, Romania

†Faculty of Mathematics and Computer Science, Transilvania University of Braşov, Iuliu Maniu Street, nr. 50, 500091, Braşov, Romania

‡Faculty of Mathematics and Computer Science, University of Bucharest, Academiei Street 14, 010014, Bucharest, Romania