A general framework for fractal interpolation functions

Abstract: M. Barnsley introduced the concept of fractal interpolation function as an alternative method for construction of interpolation functions. Such a function is the attractor of an iterated function system comprising Banach contractions (on the product of two real compact intervals) with respect to the second variable. In this presentation, we are going to discuss about enlarged classical Barnsley's framework by allowing the constitutive functions of the system to be Edelstein contractions in the second variable. As the class of Edelstein contractions contains the class of Matkowski contractions, the class of Meir-Keeler contractions, the class of F-contractions and the class of theta-contractions, it is a much more flexible framework for the construction of fractal interpolation functions. We also going to discuss about a result concerning the estimation of lower and upper box dimensions of the graph of a fractal interpolation function constructed via our general method.