44th Summer Symposium in Real Analysis

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Characterizing the coordinate functions of space filling curves

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Abstract

The coordinate functions, f and g, of a space filling curve are continuous functions from $[0,1]$ to $[0,1]$ so that $F(t) = (f(t), g(t))$ maps $[0,1]$ onto the unit square. In [1] several necessary conditions for a continuous function f are given for there to be a continuous g so that $F(t) = (f(t), g(t))$ maps $[0,1]$ onto $[0,1]^2$. In our recent paper [2] with James Foran, we define a new condition for f that is both necessary and sufficient to assure that f has a matching coordinate function g such that $F(t) = (f(t), g(t))$ fills the square.

References

[1] Foran, J. *Coordinate Functions of Space Filling Curves*, Real Analysis Exchange, **27/1** (2001), 357–362.

[2] Foran, J. & Kardos, J.
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Real Analysis Exchange, **45/2** (2020), 411–424