

Title: Purely infinite algebras and ultrapowers.

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Abstract: I will discuss what it means for a Banach Algebra to be purely infinite (with a brief nod towards the important class of purely infinite C*-algebras). The ultrapower construction is an interesting way to convert "approximate" relations into exact ones, and has important links to (continuous) model theory. We ask the question: when does a purely infinite Banach algebra have purely infinite ultrapowers? This is equivalent to having a "quantified" version of being purely infinite, where one has norm control over certain choices. This is always so for C*-algebras, but we present some examples of Banach algebras where this works, and where it doesn't. Our examples are rather "natural", in the sense that we don't just fiddle with the norm of elements. This is joint work with Bence Horvath.