Computing compact operators with recursive generation

Lawren Smithline (lawren@math.cornell.edu)

Cornell University

Math Department

Malott Hall

Ithaca, NY 14853

USA

Abstract. The Atkin U operator which acts on p-adic modular forms is a compact operator. In certain instances, we can express it as a matrix whose entries satisfy a two-dimensional recurrence.

I will define compact operator with recursive generation and show by example how their combinatorial properties improve our understanding of their spectral theory and our ability to do numerical experiments.