

WHICH BETA-SHIFTS HAVE A LARGEST INVARIANT MEASURE?

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For $\beta > 1$, the corresponding *beta-shift* is the closure of the set of symbol sequences arising as a β -expansion. The lexicographic order on the beta-shift induces a certain partial order on the set of all shift-invariant probability measures (and in particular on the set of all periodic orbits).

If β is an integer then the fixed point (measure) $(\beta - 1, \beta - 1, \dots)$ is the largest invariant measure for this partial order. If β is non-integer then there need not be a largest invariant measure.

Problem: For which β does the partial order have a largest shift-invariant measure? And in such cases, what is this measure?

In this talk I will present the solution to the above Problem. The characterisation of those beta-shifts with a largest invariant measure involves subshifts of finite type, Sturmian sequences, and ergodic optimization. This is joint work with Oliver Jenkinson.