Zero-one law of orbital limit points

Karl Grosse-Erdmann
Université de Mons
Belgium

In 2012, Kit Chan and Irina Seceleanu obtained a remarkable result on the dynamics of unilateral (or bilateral) weighted backward shift operators on $\ell^p(\mathbb{N})$ (or $\ell^p(\mathbb{Z})$): if some orbit under the action of the shift operator has a non-zero limit point then the operator admits a dense orbit, which means that it is hypercyclic. In the bilateral case, their proof is constructive and technically demanding. We present here a new, more abstract, proof that extends the result to arbitrary Fréchet sequence spaces in which the natural unit sequences form an unconditional basis. There is also a version for chaotic behaviour.

This is joint work with Antonio Bonilla.