

ABSTRACT. We show that for infinite measure-preserving transformations, power weak mixing does not imply multiple recurrence. We also show that the infinite measure-preserving “Chacon transformation” known to have infinite ergodic index is not power weakly mixing, and is 3-recurrent but not multiply recurrent. We also construct some doubly ergodic infinite measure-preserving transformations that are not of positive type but have conservative Cartesian square. Finally, we study the power double ergodicity property.