Plunnecke inequalities in countable abelian groups - general case

Abstract:

Plunnecke inequalities for sumsets of finite sets in abelian groups are extended to measure-preservation systems (mps). For a set $A$ in a group, and a set $B$ of positive measure in mps, we estimate the measure of the union of translations along the set $A$ of $B$. To prove the new inequalities we extend the graph-theoretic method recently developed by Petridis to "measure graphs". As an application, through Furstenberg's correspondence principle, we obtain the new Plunnecke type inequalities for lower and upper Banach density in countable abelian groups. Based on joint works with M. Bjorklund, Chalmers, and with Kamil Bulinski, Sydney.