THE KUMAR-SHELAH TRANSVERSAL THEOREM

D.H.Fremlin

I will describe a theorem concerning equivalence relations on $\mathbb{R}$, proved a couple of years ago by A.Kumar and S.Shelah, but still I believe unpublished: if $X \subseteq \mathbb{R}$ and R is an equivalence relation on X with countable equivalence classes, there is an R-free set $A \subseteq X$ with the same outer Lebesgue measure as X. The striking fact is that this result is true in ZFC, even if there are measurable cardinals. I hope to sketch some of the ideas of the proof, which lead us to an interesting class of Boolean algebras.