1030-37-401 Alexander Fish* (afish@math.ohio-state.edu), Department of Mathematics, The Ohio State University, 100 Math Tower, 231 West 18th Avenue, Columbus, OH 43210, and Mathias Beiglbck, Vitaly Bergelson and Tomasz Downarowicz. Solvability of Rado systems in D-sets. Preliminary report.

D-sets were defined recently by Bergelson and Downarowisz in two equivalent ways. The first definition is dynamical and it uses the notion of essentially recurrent point (for every neighborhood the set of return times to it contains a set of positive upper Banach density). The second equivalent definition uses ultrafilters. We show that every linear system of Diophantine equations which is solvable monochromatically for every finite coloring of the N is also solvable in every D-set. This theorem extends the theorem of Furstenberg and Weiss about solvability of partition regular systems in central sets (which are an example of D-sets). (Received August 07, 2007)