

# Image sets with regularity of differences

Robert Coulter,  
joint work with Patrick Cesarz

In the last few decades we've seen several results connecting the image sets of some special functions to difference sets and partial difference sets. Examples here include planar functions (skew-Hadamard difference sets), bent functions (difference sets), and (more classically) monomials (cyclotomic DS). It can be observed that there is a commonality (in the main) among the behaviour of these functions, in that there tends to be a certain regularity in the number of times each image occurs. In this talk we will discuss the first steps in putting down a theory based on this observation, whereby we look to find other functions whose image sets exhibit some sort of difference regularity, whether that be DS, PDS or GDS.