

**Meeting:** 1002, Pittsburgh, Pennsylvania, SS 10A, Special Session on Trends in Operator Theory and Banach Spaces

1002-46-201      **Richard M Aron\*** ([aron@math.kent.edu](mailto:aron@math.kent.edu)), Department of Mathematics, Kent State University, Kent, OH 44242. *Vector spaces contained in the zero set of a polynomial.*

We review some results and open problems concerning what is known as “spaceability” of the set  $P^{-1}(0)$ , where  $P : E \rightarrow K$  on a Banach space  $E$  and  $K = R$  or  $C$ . Specifically, we discuss recent work with P. Hájek on the control of the dimension of vector subspaces of  $P^{-1}(0)$ , where  $P$  is an odd polynomial on  $R^n$ , which builds on previous work with R. Gonzalo and A. Zagorodnyuk. We also describe earlier work of A. Plichko and A. Zagorodnyuk on complex valued polynomials. Finally, we mention several open problems. For instance, if  $E$  is a non-separable complex Banach space and  $P : E \rightarrow C$  is a polynomial, does  $P^{-1}(0)$  contain a non-separable subspace?

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