



Alexander J. Izzo (aizzo@bgnet.bgsu.edu) Department of Mathematics & Statistics, Bowling Green State University, Bowling Green, OH 43403-0221, USA, *The peak point conjecture and function algebras invariant under group actions.*

ABSTRACT. We will discuss work motivated by the so called peak point conjecture. This conjecture asserted that if A is a function algebra on a compact space X such that the maximal ideal space of A is X and every point of X is a peak point for A , then $A = C(X)$. This conjecture was disproved by Brian Cole in 1968 using a clever construction. Additional counterexamples to the peak point conjecture have arisen in the study of polynomial and rational approximation in several complex variables. Nevertheless, John Anderson, John Wermer, and the speaker have proved theorems showing that under a variety of additional hypotheses the peak point conjecture does hold. Motivated by a question raised by Ronald Douglas in connection with his work on a conjecture in operator theory due to William Arveson, the speaker has obtained unexpected applications of the above mentioned work to function algebras invariant under group actions. Surprisingly the answer to Douglas's question is dimension dependent.

We will also present a new conjecture that can be viewed as a replacement for the disproved peak point conjecture.