

BOURGIN-YANG VERSION OF THE BORSUK-ULAM THEOREM

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In 1933, S. Ulam posed and K. Borsuk showed that if $n > m$ then *it is impossible* to map $f : S^n \rightarrow S^m$ preserving symmetry, that is, satisfying $f(-x) = -f(x)$. Next in 1954-55, C. T. Yang and D. Bourgin showed that if $f : S^n \rightarrow \mathbb{R}^{m+1}$ preserves this symmetry then $\dim f^{-1}(0) \geq n - m - 1$.

We will begin with the background of Borsuk-Ulam theorem and its applications. Next, we will present recent versions of the Bourgin-Yang theorem for some other groups of symmetries and also discuss the case $n = \infty$.