

# The Borsuk-Ulam Theorem, Some History, Applications, and Generalizations

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## Abstract

The Borsuk-Ulam Theorem is one of the most famous theorems of algebraic topology. After stating it and a couple of equivalent versions, we shall discuss some of its history and applications. Then we show how it can be generalized - instead of starting with a sphere and the antipodal involution we can consider any finite dimensional CW-complex  $X$  and a fixed point free involution on  $X$ . The results obtained represent joint work with Claude Hayat (Toulouse) and Daciberg Lima Goncalves (Sao Paulo), and we shall show how they lead to a complete solution of the problem when  $X$  is a manifold of dimension 2 or 3.