

## Abstract

This poster explores the Hopf mapping, explicitly illustrating how it connects complex numbers to four-dimensional space using stereographic projection. By examining pairs of complex numbers  $(z_1, z_2)$  that satisfy  $|z_1|^2 + |z_2|^2 = 1$ , I demonstrate how the Hopf mapping projects points from the three-dimensional sphere  $S^3$  onto the two-dimensional sphere  $S^2$ . This visualization reveals the intricate structure of the mapping and its significance in topology. I also discuss real-world applications, highlighting its role in theoretical physics, particularly in string theory and the study of higher-dimensional spaces.