

## Extra Credit Assignment 5

Due Friday, March 12, 11:59 PM

Show that for any finite abelian group  $A$ , there exists a topological space  $X_A$  whose fundamental group is isomorphic to  $A$ , and such that  $X_A$  receives a surjective continuous map from some finite-dimensional sphere. (You will want to use the classification of finite abelian groups.)

It turns out that, for any group  $G$ , there exists a topological space whose fundamental group is  $G$ . Typically, such spaces do not receive a surjective continuous map from a sphere.