# Topological existence proofs for some symmetric periodic orbits

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## Abstract

The search for simple periodic solutions has been an important theme in celestial mechanics research since earliest times. When some of the masses are equal it is interesting to look for symmetric periodic solutions such that the whole orbit can be reconstructed from a segment of it by Euclidean symmetries and permutations of the masses. I will describe a topological approach to finding such solutions based on constructing isolating blocks or Wazewski sets in the phase space.