# Rendezvous Search on the Edges of Platonic Solids

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The classic Rendezvous Search problem involves two players moving along the same line at random until they meet. We were inspired by the Astronaut Problem rendition in which two players are placed on a sphere and move around until they meet. We have simplified the model to discrete units of time and to take place along the edges of platonic solids. We assume the search ends when the two players can see each other. We have compared the mean times to end on all five solids under an unbiased random strategy, and have altered assumptions and strategies in various versions to see how certain changes affect the mean time to end. We have explored the possibility of waiting on any given turn under both biased and unbiased random strategies. We have also explored non-random, multi-step strategies with up to seven steps. These calculations all involve using first-order Markov chain decompositions. We are working to confirm patterns that we have found in our results.

Keywords: rendezvous search, platonic solids, Markov chains