

Chesapeake Section of the

# Optimal launch angles: Novel perspectives of an ancient problem 

Saturday, October 22, 2022 10:00 AM (15 minutes)


#### Abstract

We revisit the ancient problem of finding the optimal angle for launching a projectile so as to maximize the range. In the last meeting, we showed a solution to this problem using only geometry. Here, we present some novel perspectives. One is the notion of "duality" (between the launch and target sites). Another is the envelope of all trajectories (for launching at different angles, but with the same speed). Consequences associated with these ideas are explored. If time permits, we will show a simple, unified approach that includes launches on a spherical earth. Relying only on energy conservation and properties of ellipses/parabolas, this approach should lie within the grasp of high school students.


Primary authors: Prof. RUIZ, Michael J. (University of North Carolina at Asheville); Prof. ZIA, R. K. P. (Virginia Tech)

Presenter: Prof. ZIA, R. K. P. (Virginia Tech)
Session Classification: Morning Session (Chair: Jason Sterlace, Zoom Monitor: Juliana Butler)

