A HAMSTER MINI-TALK

DOGFIGHT GEOMETRY 101

INTRODUCTION

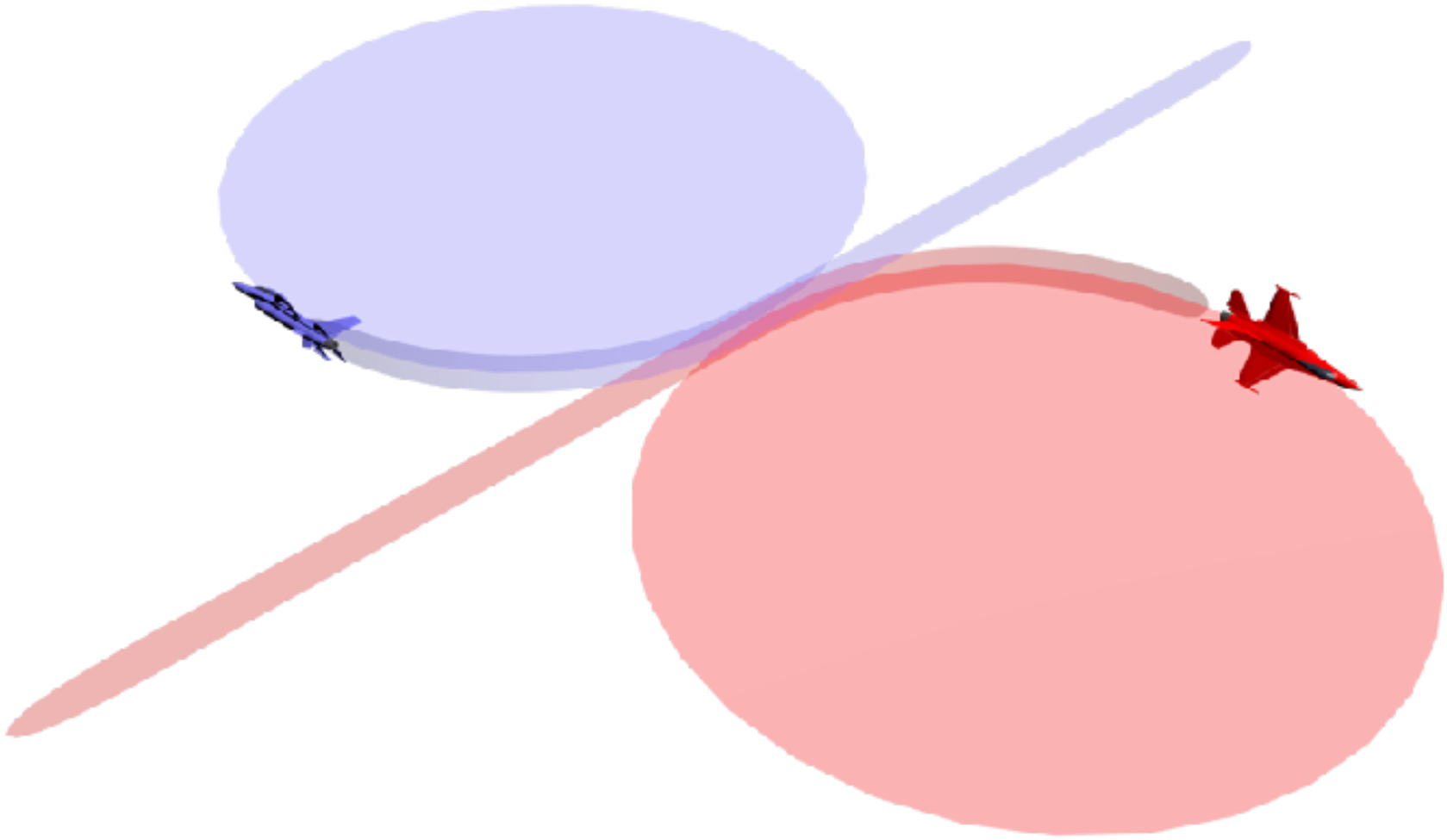
- Purpose is to provide a simple and non-technical introduction to dogfight geometry so that you can recognise which geometric state you are in when fighting
- The basic geometry also provides a simple vocabulary to use when discussion fights both abstractly and in debriefing
- Understand these are simplified states and and the descriptions describe what would happen if these states are simplistically maintained. One aspect of successful dogfight strategy is being able to force your opponent from one state to another that increases your advantage while decreasing his or hers.

AIM

- Provide the tools to
  - understand your position and motion relative to your opponent
  - communicate about basic motion and positioning in a dogfight with other virtual pilots

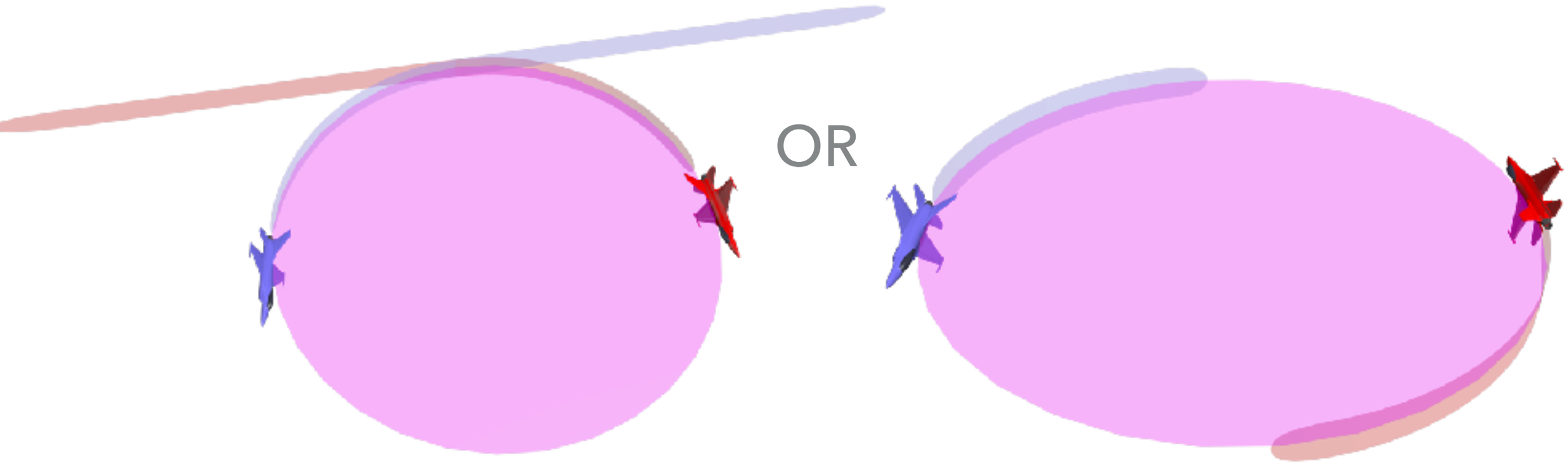
TWO CIRCLE MANOEUVRING

- Aircraft in two distinct circles with minimal overlap
- Results in repeating merges



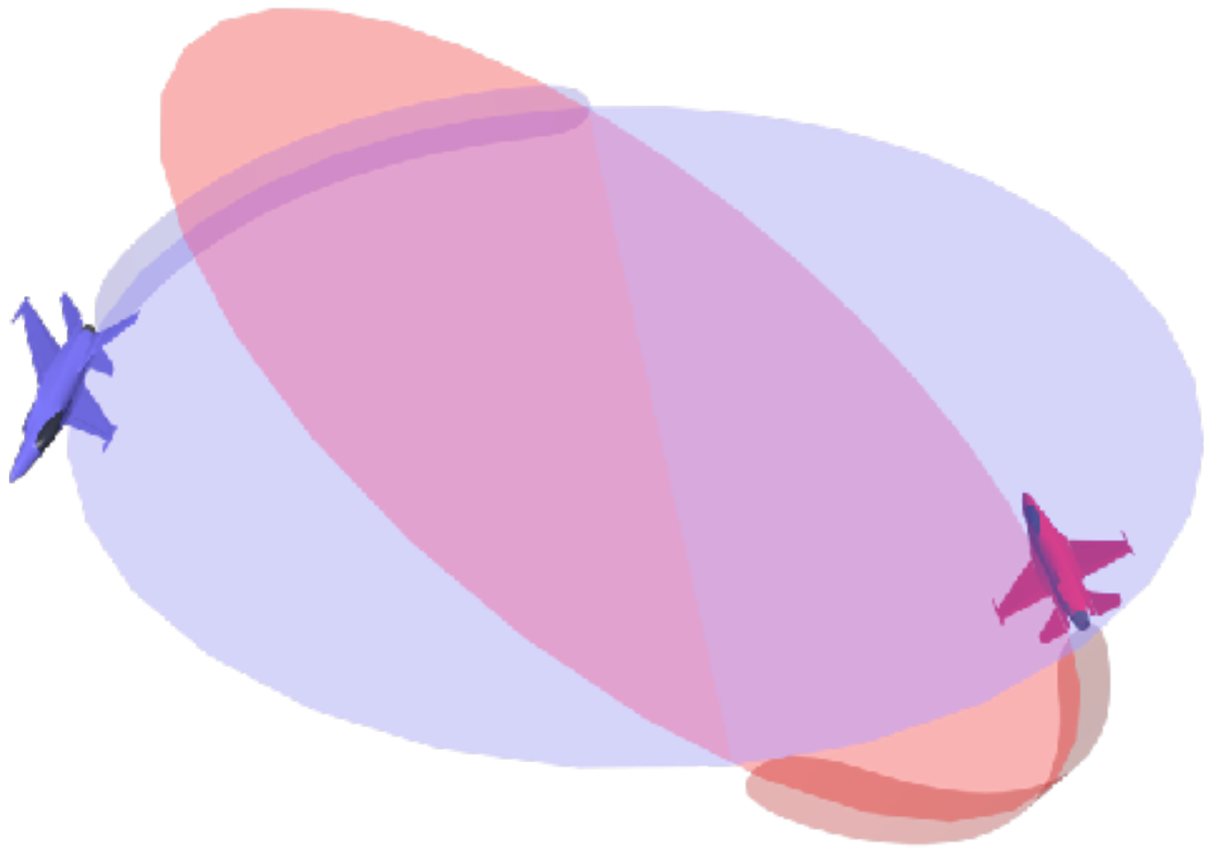
ONE CIRCLE MANOEUVRING

- Aircraft share a single circular track
- Results in repeating merges or a simple chase



OUT OF PLANE MANOEUVRING

- Aircraft circular tracks are at an angle to each other
- Creates relative lateral motion making firing solutions very hard because you have to solve for two dimensions: lateral and vertical

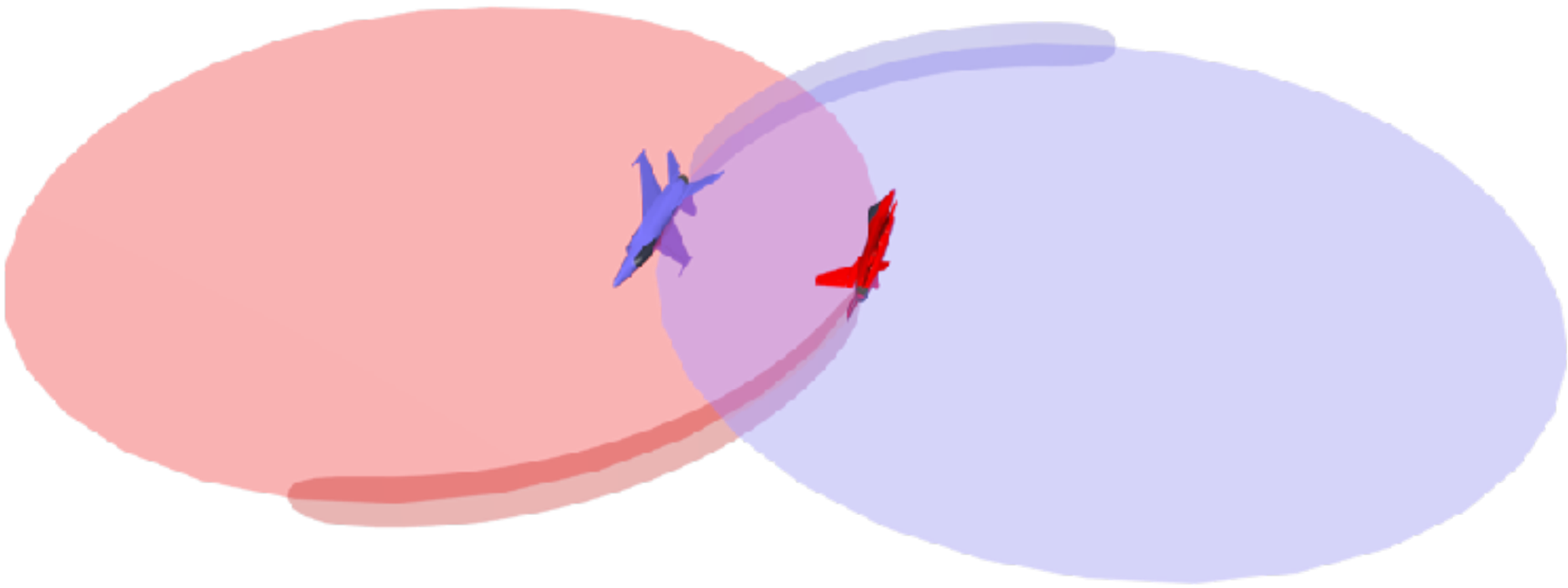


IN PLANE MANOEUVRING

- Aircraft circular tracks are aligned to each other
- Removes relative lateral motion making firing solutions a problem along only one dimension

UNCONNECTED TRACKS

- Aircraft circular tracks not aligned or adjacent
- Severely hinders firing solutions because the aircraft are never correctly aligned and so momentary snap shots are the best you can hope for.

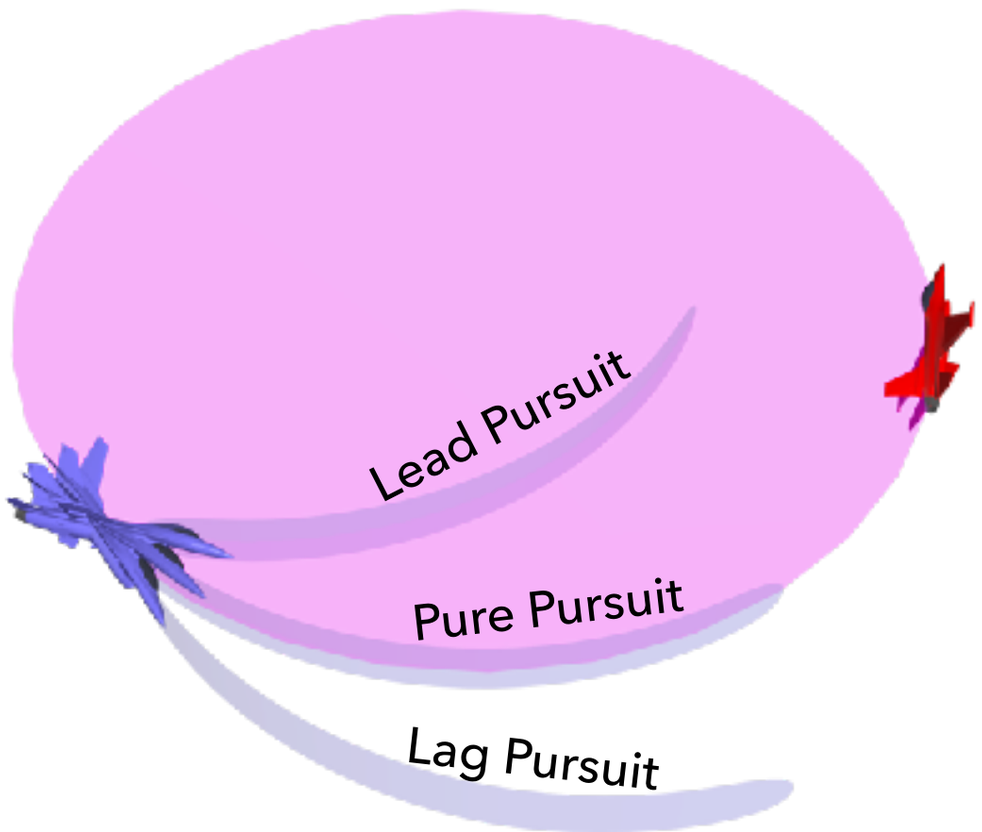


ENTERING THE FIGHT

- To enter a fight you want to establish connected tracks. Therefore you need to enter the flight on the track itself. In the below example the pilot may be tempted to turn into the enemy but must resist turning until he gets to the entry window shown below.
- You recognise that point when you see a sudden relative lateral acceleration in the enemy's movement.

PURSUIT TYPES

- To fly inside the circle use lead pursuit (increase G)
- To fly on the circle use pure pursuit (equal G)
- To fly outside the circle use lag pursuit (decrease G)



HOW TO PRACTICE

- Setup an agreed scenario, eg. 1v1 right two circle level
- Merge
- Maintain a pre-agreed state (e.g. GATE 350 KIAS level) and watch the effect of the turn both from the cockpit as well as in tacview. Learn to recognise the state visually.
- Repeat for other given geometries.

FINAL THOUGHTS

- Being able to recognise the fights current geometry state allows you to make manoeuvring decisions to try and gain an advantage. For example:
  - Trying to prevent being fired on? Try get out-of-plane with lateral motion (jinking) or cause the two tracks to stop overlapping.
  - Trying to gain a firing solution? Try to manoeuvre in-plain with pure pursuit till close enough then “spend” your energy advantage with lead pursuit to bring your guns to bare.
- This is not fight club. Now that you’ve been given some vocabulary talk about it a lot. Let your experience teach others and in turn benefit from their experience. The sky (and in this case also the ground) really is the limit!