


What is a direction field?

A **direction field** graphs velocity as a function of position. In this program, we obtain **roll rate** and **pitch rate** from **bank** and **angle of attack (AOA)**.

Rate of roll and rate of pitch, as a vector.  AO
A
Bank

You can change the direction field with the check boxes.

Your **control inputs** from the mouse are added to that from the direction field. From this, the program calculates the new bank and AOA of the aircraft.

What happens when the velocity is zero?

Points with zero velocity are called **equilibria**. Some types of equilibria are **stable nodes**, **unstable nodes** and **saddles**. Stable nodes attract, unstable nodes repel and saddles attract in one direction but repel in another.

Questions:

Experiment with the different direction fields. Where are the equilibria? What types are they?

Move the mouse a bit, then let it go. What happens?

With which direction field is the aircraft the easiest to fly? Why might you use one of the others?

Click on one of the following for more information