

Why Planes Don't Fly in a Straight Line - Adam Brown

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SUMMARY

The speaker discusses the misconception of flight paths on a flat map, using the example of a flight from San Francisco to London. They explain how the curvature of the Earth affects perceived straight lines and relate this to concepts in general relativity, emphasizing that what appears straight on a flat representation is actually curved in reality.

- Flight paths on flat maps can misrepresent the shortest distance due to Earth's curvature.*
- The term "rum line" refers to a path that appears straight but is not the shortest route.*
- A true straight line on a curved surface (like Earth) differs from what flat maps depict.*
- The confusion arises from treating curved space as flat, similar to misunderstandings in general relativity.*
- Understanding curvature is essential for accurately interpreting distances and paths in a three-dimensional space.*

If you imagine the map that you see on a airplane, imagine you are flying from San Francisco to >> >> London. Here is Greenland and here is England. Obviously, the plane should be flying like this, moving along the shortest distance from one place to another, but instead they take this massive detour that clips Greenland and heads on down. You know that in fact that's not what's going on. You know that in fact, despite what it looks like on the graph, this is not a straight line. This this rum line sometimes called is not straight >> >> and would certainly not be the shortest path. And this is in fact, to good approximation, a straight line, as I will now demonstrate.

And you can see that the straight line would go over Greenland and hit London. That's obvious on this map cuz this map obviously reflects the curvature of the earth. This map is getting confused and it's getting confused because it's trying to pretend that the earth is flat. And whenever you try and take something that is curved and pretend it's not curved, you will inevitably be end up being wrong about what is and is not a straight line. And just like in general relativity, the reason you are confused about what's straight and what's not straight is that you are trying to pretend with this graph that you are in a flat space-time and in fact you are in a curved space-time.