

## Shortest Paths, Soap Films and the Shape of the Universe



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In high school geometry we learn that the shortest path between two points is a line. In this talk we will explore this idea in several different settings. First, we will apply this idea to finding the shortest path connecting four points. Then we will move this idea up a dimension and look at a few equivalent ideas in terms of surfaces in 3-dimensional space. Surprisingly, these first two settings are connected through soap films that result when a wire frame is dipped into soap solution. We will use a hands-on approach to look at the geometry of some specific soap films or "minimal surfaces". We will explore this area and end up relating all of this to a brief discussion about the shape of the universe.