Wormholes and Time Travel

A wormhole is a hypothetical shortcut between two distant regions of space-time. Although a three dimensional wormhole is impossible to fully visualize, a two dimensional analogue can be constructed to aid visualization. Imagine an intrinsically flat, two dimensional, space as a folded piece of paper embedded in a higher three dimensional space, where a tube connects two distant points, A and B, on the paper. The length through the tube (the wormhole) can be much less than the distance from A to B along the paper, creating a shortcut.

A full three dimensional wormhole would have entrances and exits that are three dimensional spheres rather than two dimensional rings like the mouths of the paper tube. Such lower dimensional, human-friendly, visualizations are termed embedding diagrams, and the iconic wormhole image is usually shown as the well known Schwarzschild embedding diagram, which is the wormhole analogue for a static, non-rotating, Schwarzschild black hole.