

The *curve graph* $C(S)$ of a closed orientable surface S is the graph whose vertices correspond to closed curves in S satisfying certain simple conditions. Edges join vertices that have disjoint representatives on S . Each edge is defined to have length 1. The distance $d(v, w)$ is defined to be the number of edges in a shortest path in the curve graph from v to w . Any such path is called a *geodesic*. The intersection number of v and w , denoted $i(v, w)$, is simply the number of intersections of the two curves as they travel along the surface.

We highlight a new relationship between the distance $d(v, w)$ of a filling pair of curves v and w in $C(S)$ and the surface decomposition of S into polygons that is induced by cutting S open along v and w . The main result is the discovery and analysis of particular configurations of rectangles in the decomposition, called *spirals*. We show that adding spirals, an operation which always increases intersection number, can increase distance or can send intersection number to infinity, leaving distance unchanged. This talk is based on *Distance and intersection number in the curve graph of a surface*, joint with Joan Birman (Columbia University) and Matt Morse (New York University).