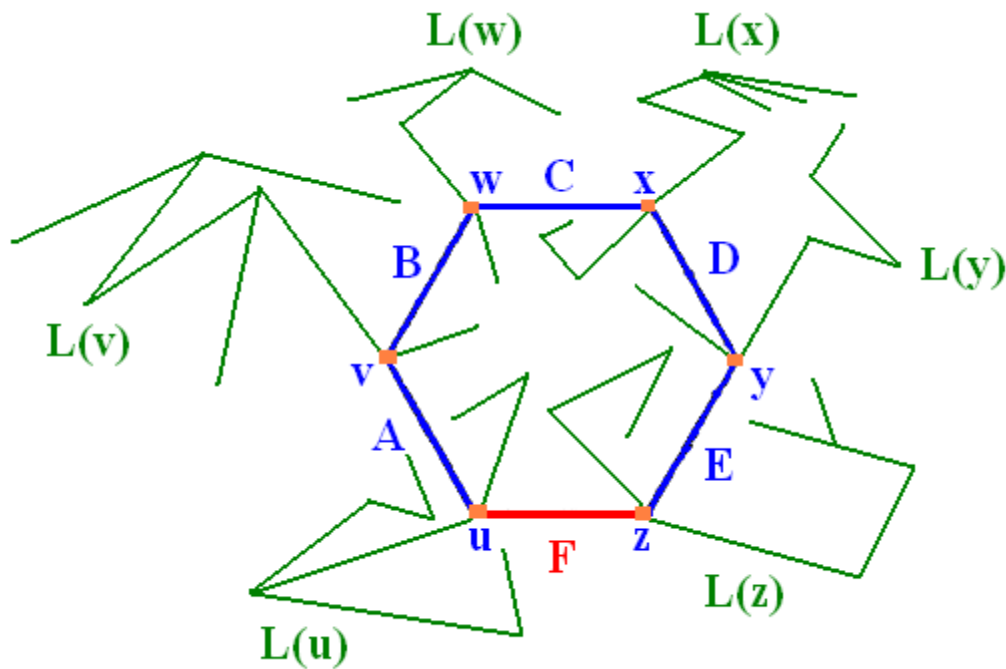# Tree – plus – one graphs

Theorem **III.**3.1 describes the fundamental groups of graphs which are unions of a maximal tree plus one additional edge.   Here is a drawing to illustrate a typical example for which this assumption holds; in this example, if one removes the edge **F,** the resulting graph $\mathscr{M}$ is a maximal tree.

All of the subtrees which are relevant to the proof of the theorem are marked in blue or green. In particular, $\mathbf{A - B - C - D - E}$ is the path in the maximal tree $\mathscr{M}$ joining the two vertices u and z of the deleted edge **F.** If we remove all these edges we are left with the union $\mathscr{N}$ of all the graphs marked in green. Since $\mathscr{M}$ is a maximal tree, each component of $\mathscr{N}$ is also a tree, and furthermore each component contains exactly one of the vertices $u, v, w, x, y, z.$