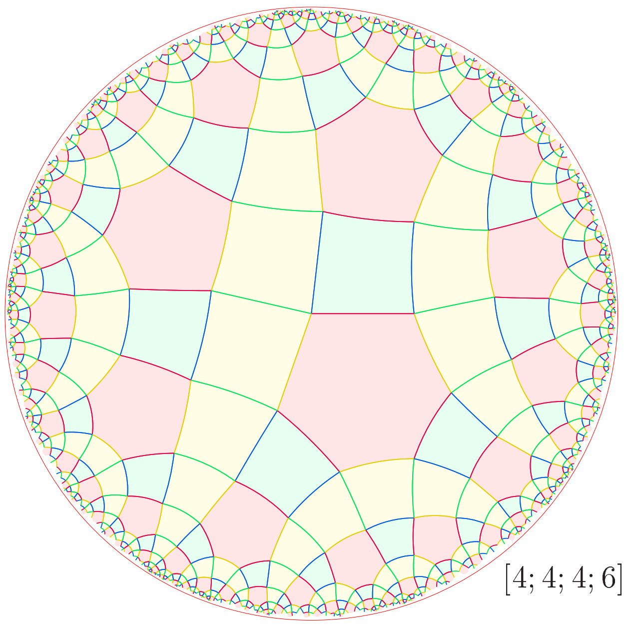
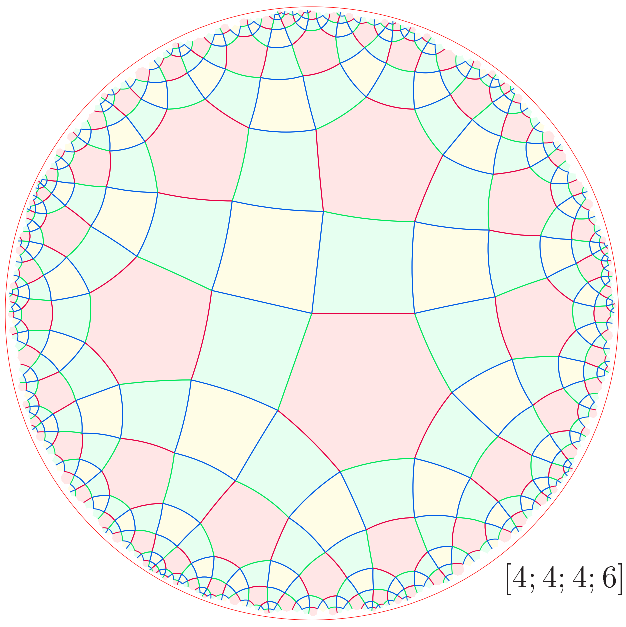
Applications

Theorem (Twin graphs) For archimedean graphs, the type vector characterizes the graph, up to isometry. This result is false for graphs embedded in the hyperbolic plane.



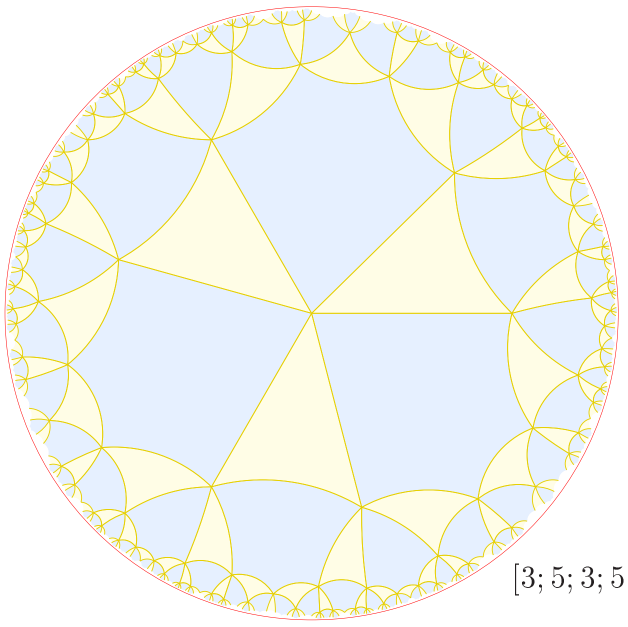
$[4; 4; 4; 6]$



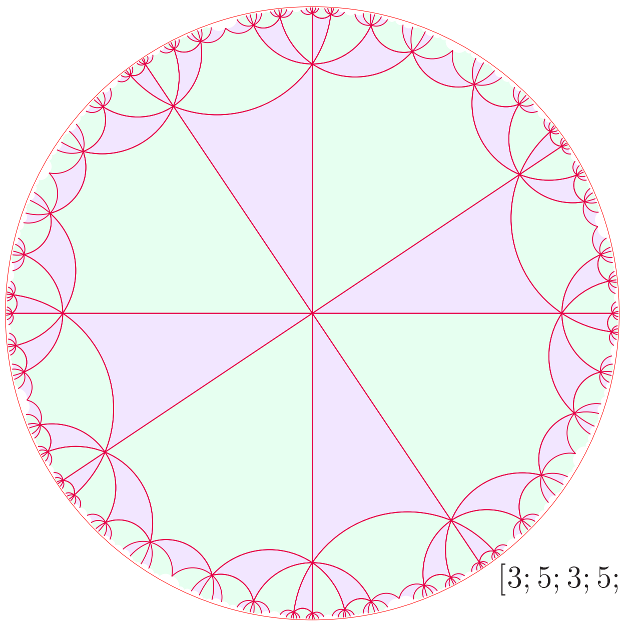
$[4; 4; 4; 6]$

These two Cayley graphs are locally isomorphic, but not globally.

Theorem (Non-Cayley graphs) Archimedean graphs are all realizations of Cayley graphs. This result is false for graphs embedded in the sphere or in the hyperbolic plane.



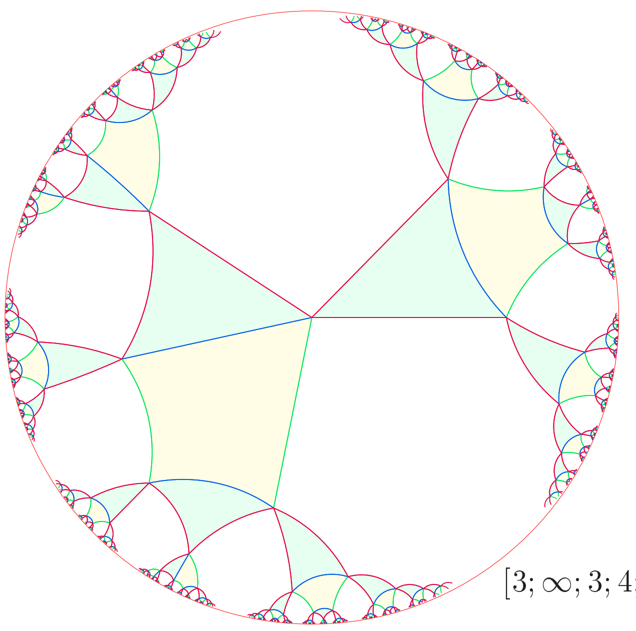
$[3; 5; 3; 5; 3; 5]$



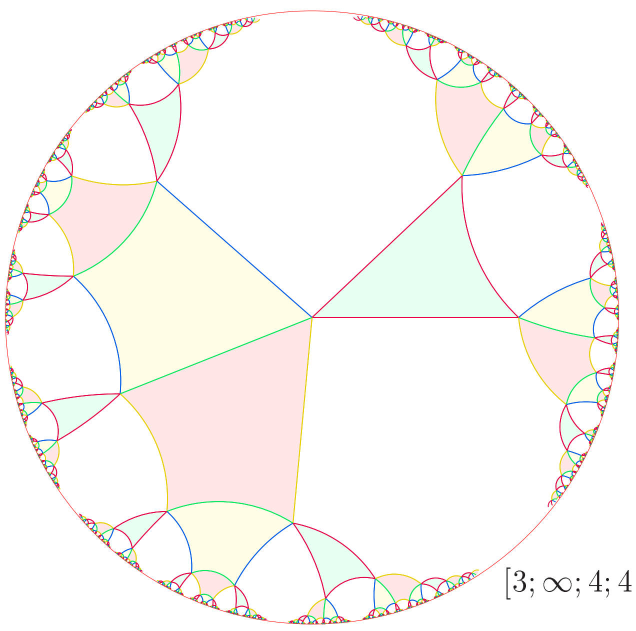
$[3; 5; 3; 5; 3; 5; 3; 5]$

One of these graphs is a Cayley graph, the other is not.

Remark (1-connected case) Among the class of 1-connected vertex-transitive graphs, it is much easier to find vertex-transitive but non Cayley graphs.



$[3; \infty; 3; 4; \infty]$



$[3; \infty; 4; 4; \infty]$

One of these graphs is a Cayley graph, the other is not.