

# The Whitehead Conjecture-An Overview

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A space is called aspherical if all its higher homotopy groups vanish, that is it does not have high dimensional holes. The 3-space we inhabit does not have any holes. A donut does contain a 1-dimensional hole but no higher dimensional ones. In the early 20th century Max Dehn showed that knot complements are aspherical, but his proof contains a serious gap. Whitehead noted in the 1930s that one could establish the asphericity of knot complements by proving that asphericity is a hereditary property for 2-complexes, which seemed almost obvious from a combinatorial viewpoint. Asphericity for knot complements was finally shown to hold by Papakyriakopoulos in 1957, but Whitehead's question whether a subcomplex of an aspherical 2-complex is aspherical remains unanswered to this day. In my talk I intend to survey the mathematics that grew out of Whitehead's fundamental question.

**Friday, August 29th, 2008**

**2:40PM**

**MG 120**

Refreshments in MG 226 at 2:20pm