

**Brendan OWENS**

**Planar graphs and rational homology four-balls**

*Abstract:* To a planar graph one can associate a link  $L$ , a 3-manifold  $Y$ , and a smooth 4-manifold  $X$ . I will describe these objects and the relationships between them, and give a conjectural criterion for  $X$  to embed as a submanifold of a connected sum of complex projective planes, and for  $Y$  to bound a rational homology four-ball. I will also discuss some background and motivation for these problems.