

**“Open Questions and Conjectures”**

from the problem session held on 22 June 2002, in the special session on

**“Low Dimensional Homotopy and Combinatorial Group Theory”**

at the AMS Meeting #978, Portland State University, Portland, Oregon.

1) (Left over from **C. T. C. Wall**’s work) Assume that  $G$  is a finite group. Does there exist a 2-truncated projective  $\mathbb{Z}G$ -resolution of  $\mathbb{Z}$  with Wall obstruction  $0 \in \overline{K}_1 G$  that is not chain homotopy equivalent to the cellular chain complex of the universal cover of any 2-dimensional CW-complex with fundamental group  $G$  ?

2) (**Roger C. Alperin**) Does the Hawaiian ear ring group act freely on an  $\mathbb{R}$ -tree ?

3) (**William A. Bogley**) Are there any restrictions on torsion-free finitely presented subgroups of diagram groups associated with monoid presentations ?

4) (**William A. Bogley**) Does every finitely presented group embed in a group of type  $FP_3$  ?

5) (**Greg R. Conner**) Conjecture: The fundamental group is a complete homotopy invariant for planar Peano continua.

6) (**Jens Harlander**) Do the finiteness properties of group extensions depend on the extension class ? Specifically, this question for the property of “finitely presented” ?

**F. Rudolf Beyl**