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Group actions on pseudo-real surfaces.

A Riemann surface is *pseudo-real* if it admits anti-conformal automorphisms, but no anti-conformal automorphism of order 2. In the moduli space of compact Riemann surfaces of given genus, pseudo-real surfaces represent the points that have real moduli, but are not definable over the reals. In this talk I'll describe a number of recent discoveries about pseudo-real surfaces, including analogues of theorems of Wiman and Maclachlan on the maximum order of a cyclic or abelian group of automorphisms. Also I'll discuss the *pseudo-real genus* $\psi(G)$ and the *strong pseudo-real genus* $\psi^*(G)$ of a finite group G . The former is the smallest genus of those pseudo-real surfaces on which G acts faithfully as a group of automorphisms, while the latter is the same but under the assumption that half the elements of G reverse orientation ... when such a surface exists. In particular, I'll show that for every $g > 1$ there is some G with $\psi(G) = \psi^*(G) = g$, so that the range of each of the functions ψ and ψ^* is complete. Finally, I'll give an example of a group G for which $\psi^*(G)$ is defined but $\psi(G) < \psi^*(G)$.

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