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Promoting circle actions to actions on the real line

Circularly-orderable and left-orderable groups play an important, and sometimes surprising, role in low-dimensional topology and geometry. For example, these combinatorial conditions completely characterize when a countable group acts on a 1-manifold. Through the so-called L-space conjecture, left-orderability of the fundamental group of rational homology 3-sphere is connected to analytic and topological properties of the manifold. I will present new necessary and sufficient conditions for a circularly-orderable group to be left-orderable, and introduce the obstruction spectrum of a circularly-orderable group. This raises a plethora of intriguing questions.

This is joint work with Jason Bell and Adam Clay.