

**David Sherman**, University of Virginia.

**Title:** Locally inner automorphisms of operator algebras

**Abstract:** Say that an automorphism of a unital  $C^*$ -algebra is *locally inner* if on any element it agrees with some inner automorphism. We discuss whether, for various classes of  $C^*$ -algebras and von Neumann algebras, a locally inner automorphism must be inner. We also employ this concept to answer the question: does the diagonal sum descend to a well-defined map on the automorphism orbits of a unital  $C^*$ -algebra? (By the “diagonal sum” of two elements we simply mean the  $2 \times 2$  matrix which has the given elements on the diagonal.) If time allows we will conclude with an application to ultrapowers.