Abstract:
The Burau representation of the braid group was introduced in the 1930s and has been used since the 1980s to understand the Jones polynomial. A critical component of this study has been trying to understand when the Burau representation is faithful. It is known to be faithful for the Braid group on fewer than 4 strands and unfaithful on more than 4 strands. If the representation is unfaithful on 4 strands, it will solve the Jones unknot conjecture. We will review the current state of knowledge and some new approaches suggested by the work of Armond, Huynh and Lê.