

Meeting: 1002, Pittsburgh, Pennsylvania, SS 1A, Special Session on Invariants of Knots and 3-Manifolds

1002-57-204 **Daniel S. Silver** (silver@jaguar1.usouthal.edu), Department of Mathematics and Statistics, Mobile, AL 36688, and **Susan G Williams*** (swilliam@jaguar1.usouthal.edu), Dept. of Mathematics and Statistics, Mobile, AL 36688. *Alexander groups of long virtual knots.*

We define an extended Alexander group for long virtual knots, and use it to obtain invariants of open strings (long flat virtual knots). We show that every virtual knot is the closure of infinitely many long virtual knots. Examples of noncommuting open strings and a ribbon concordance obstruction are given. (Received September 14, 2004)