

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

1002-57-209 **Daniel S Silver*** (silver@jaguar1.usouthal.edu), Department of Mathematics and Statistics, ILB 325, Mobile, AL 36688, and **Susan G Williams** (swilliam@jaguar1.usouthal.edu), Department of Mathematics and Statistics, ILB 325, Mobile, AL 36688. *Knots and Lehmer's Question.*

In 1933, Lehmer asked whether the absolute value of the product of the roots outside the unit circle of a monic integral polynomial can be arbitrarily close but not equal to 1. Lehmer could do no better than 1.17628..., a value that he achieved with a remarkable polynomial of degree 10. Despite extensive computer searches, Lehmer's polynomial retains the honor of having the smallest "Mahler measure" greater than 1.

In order to investigate Lehmer's Question, it suffices to consider Alexander polynomials of hyperbolic fibered knots and 2-component links. Lehmer's polynomial arises as the Alexander polynomial of the $(-2,3,7)$ -pretzel knot. All known examples of hyperbolic fibered knots and links with complements containing few ideal tetrahedra have Alexander polynomials with small Mahler measure.

We discuss joint work with A. Stoimenow about the behavior of Mahler measure of Alexander and Jones polynomials of knots and links when twisting is performed. In particular, if the Alexander polynomials of a sequence of alternating hyperbolic fibered links have unbounded Mahler measure, then their volumes are also unbounded. (Received September 14, 2004)