1000-58-155 **Weiping Li***, Department of Mathematics, Stillwater, OK 74078. *L^2–Alexander invariants for knots.*

In this talk, in an attempt to extend an earlier work of Lück, we construct a knot invariant with parameter in $\mathbf{C}^*$ by using the fundamental L^2-representation of the fundamental group of the knot complement, which may be thought of as an L^2-analogue of the usual Alexander polynomial of the knot in S^3. When restricted to $U(1)$ parameters, we interpret this invariant in terms of the $U(1)$ twisted L^2–Reidemeister torsion. We also show that this L^2-invariant depends only on the norm $|t|$ for $t \in \mathbf{C}^*$. In particular, this implies an unexpected rigidity property of the $U(1)$ twisted L^2-torsion on a knot complement. A possible relationship with the volume conjecture is discussed. This is a joint work with Weiping Zhang. (Received August 23, 2004)