1014-16-932 **Darren Funk-Neubauer*** (neubauer@math.wisc.edu), 480 Lincoln Drive, Madison, WI 53706-1388. *Leonard Pairs and Representations of Quantum Algebras.* Preliminary report.

Let V be a finite dim. vector space over an alg. closed field $\mathbb{K}$. Let q be a nonzero scalar in $\mathbb{K}$ that is not a root of unity. Consider a pair on linear maps $A : V \to V$, $A^* : V \to V$ which satisfy the following:

1. There exists a basis for V with respect to which the matrix representing A is diagonal and the matrix representing A^* is irreducible tridiagonal.

2. There exists a basis for V with respect to which the matrix representing A^* is diagonal and the matrix representing A is irreducible tridiagonal.

We call such a pair a Leonard pair on V. We assume there exist nonzero scalars a, b, c in $\mathbb{K}$ such that the eigenvalues of A (resp. A^*) are aq^{2i-d} (resp. $bq^{2i-d} + cq^{d-2i}$) for $0 \leq i \leq d$. We discuss how such Leonard pairs are divided into two families. For one family we use the Leonard pair to construct two irreducible $U_q(\widehat{\mathfrak{sl}}_2)$-module structures on V and describe how these modules are related to the actions of A and A^*. For the other family we use the Leonard pair to construct an irreducible $U_q(\mathfrak{sl}_2)$-module structure on V and describe how this module is related to the actions of A and A^*. (Received September 26, 2005)