1027-33-63 **Paul M Terwilliger*** (terwilli@math.wisc.edu), 480 Lincoln Drive, Madison, WI 53706.
Tridiagonal pairs and the q-tetrahedron algebra.

Let K denote a field and let V denote a vector space over K with finite positive dimension. By a *Leonard pair* on V we mean an ordered pair of linear transformations $A : V \to V$ and $A^* : V \to V$ that 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.

It is known that the Leonard pairs are in bijection with the orthogonal polynomials from the terminating branch of the Askey scheme. This branch includes the q-Racah polynomials and their relatives. In this talk we consider a mild generalization of a Leonard pair called a *tridiagonal pair*. We also consider the q-tetrahedron algebra, which can be viewed as a q-analog of the three-point $\mathfrak{sl}_2$ loop algebra. We obtain a tridiagonal pair from each finite-dimensional irreducible module for the q-tetrahedron algebra. (Received February 13, 2007)