1009-33-139 **Paul M Terwilliger*** (`terwilli@math.wisc.edu`), Department of Mathematics, University of Wisconsin, 480 Lincoln Drive, Madison, WI 53706. *Tridiagonal pairs of q-geometric type.*

Let $\mathbb{K}$ denote a field and let V denote a vector space over $\mathbb{K}$ with finite positive dimension. We consider a pair of linear transformations $A : V \to V$ and $B : V \to V$ that satisfy the following two conditions:

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

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

We call such a pair a *Leonard pair* on V. There is a correspondence between Leonard pairs and a family of orthogonal polynomials consisting of the q-Racah and some related polynomials of the Askey scheme. In this talk we discuss a mild generalization of a Leonard pair called a *tridiagonal pair*. We classify the tridiagonal pairs of q-geometric type. To obtain the classification we show that these tridiagonal pairs are in bijection with a certain type of module for the quantum affine algebra $U_q(\widehat{sl}_2)$. This is joint work with Tatsuro Ito. (Received August 13, 2005)