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**Sarah R. Bockting-Conrad\*** (bockting@math.wisc.edu). *Connections between  $U_q(\mathfrak{sl}_2)$  and tridiagonal pairs.*

Let  $\mathbb{K}$  denote an algebraically closed field and let  $V$  denote a vector space over  $\mathbb{K}$  with finite positive dimension. Let  $A, A^*$  denote a tridiagonal pair of diameter  $d \geq 1$  and let  $\{V_i\}_{i=0}^d$  (resp.  $\{V_i^*\}_{i=0}^d$ ) denote a standard ordering of the eigenspaces of  $A$  (resp.  $A^*$ ). In an earlier paper, we associated with  $A, A^*$  a linear transformation  $\Psi : V \rightarrow V$  such that  $\Psi V_i \subseteq V_{i-1} + V_i + V_{i+1}$  and  $\Psi V_i^* \subseteq V_0^* + V_1^* + \cdots + V_{i-1}^*$  for  $0 \leq i \leq d$ . One of the relations involving  $\Psi$  was reminiscent of a defining relation for the quantized enveloping algebra  $U_q(\mathfrak{sl}_2)$ . We explore this connection further. In doing so, we will give two natural  $U_q(\mathfrak{sl}_2)$ -module structures for  $V$  and discuss how they are related. This leads to a number of interesting relations involving the operator  $\Psi$  and other operators associated with  $A, A^*$ . (Received March 05, 2013)