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**Paul M Terwilliger\***, Math Department, University of Wisconsin-Madison, 480 Lincoln Drive, Madison, WI 53706. *The universal Askey-Wilson algebra.*

The Askey-Wilson polynomials were introduced around 1985 and soon became a major topic in special functions. This topic became linked to representation theory around 1992 when A. Zhedanov introduced the Askey-Wilson algebra AW. The algebra AW is defined by generators and relations. The relations involve a scalar parameter  $q$  and a handful of extra scalar parameters. We introduce a central extension of AW, denoted  $\Delta_q$  and called the universal Askey-Wilson algebra. Roughly speaking, up to normalization  $\Delta_q$  is obtained from AW by interpreting the extra parameters as central elements in the algebra. By construction  $\Delta_q$  involves no parameters besides  $q$ . In this talk we relate  $\Delta_q$  to the following objects: (i) Leonard pairs and Leonard triples of QRacah type; (ii) Q-polynomial distance-regular graphs; (iii) the modular group  $\mathrm{PSL}_2(\mathbb{Z})$ ; (iv) the equitable presentation for the quantum group  $U_q(\mathfrak{sl}_2)$ ; (v) the double affine Hecke algebra of type  $(C_1^\vee, C_1)$ . (Received March 05, 2013)