1154-05-697 **Paul M Terwilliger*** (terwilli@math.wisc.edu), Math Department, U. Wisconsin, 480 Lincoln Drive, Madison, WI 53706. *The alternating central extension for the positive part of the quantum group $U_q(\widehat{\mathfrak{sl}}_2)$.*

In the theory of Q-polynomial distance-regular graphs, a role is played by the positive part U_q^+ of the quantum group $U_q(\widehat{\mathfrak{sl}}_2)$. The algebra U_q^+ has a presentation with two generators A, B that satisfy the cubic q-Serre relations. Recently we introduced a type of element in U_q^+, said to be alternating. Each alternating element commutes with exactly one of A, B, $qBA - q^{-1}AB$, $qAB - q^{-1}BA$; this gives four types of alternating elements. There are infinitely many alternating elements of each type, and these mutually commute. We use the alternating elements to obtain a central extension $\mathcal{U}_q^+$ of U_q^+. We then use the alternating elements to obtain a PBW basis for $\mathcal{U}_q^+$. (Received September 09, 2019)