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**Sarah Post** and **Anthony Walter\*** ([anthony@math.hawaii.edu](mailto:anthony@math.hawaii.edu)). *A higher rank extension of the Askey-Wilson Algebra*. Preliminary report.

A novel generalization of the Askey-Wilson algebra is presented and shown to be associated with coproducts in the quantum algebra  $U_q(su(1,1))$ . This algebra has 15 non-commuting generators given by  $Q^{(A)}$ , with  $A \subset \{1, 2, 3, 4\}$  and 5 linearly independent inversions generated by an algebra antiautomorphism. The set of generators can be split into operators fixed under inversion, and those with an orientation under this inversion. We then show that the generators will either commute or satisfy q-commutator relations linear in the generators, with the restriction that parity operators commute with generators of opposite parity and the q-commutation relations are between those with the same parity. Finally, we give a novel algebra expression satisfied by the generators involving only the natural generators, i.e. those arising from the coupling scheme. (Received July 16, 2019)