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Rosa Orellana and **Mike Zabrocki***, York University, 4700 Keele St., Toronto, ON M5B1B4, Canada. *Howe duality and a multiset partition insertion algorithm.*

The partition algebra $P_r(n)$ arises as the commutant algebra of the symmetric group S_n when it acts on $V^{\otimes r}$ and where $V = \text{span}\{v_1, v_2, \dots, v_n\}$ is the permutation module. We encode this duality in an RSK algorithm on multiset partitions that describes the decomposition. If we look at the extension of how this RSK algorithm is applied to elements in the space of polynomials of degree r in variables $\{x_{ij} : 1 \leq i \leq n, 1 \leq j \leq k\}$, then the commutant of the S_n action on the first index is a multiset partition algebra. (Received February 20, 2018)