1158-16-198 **Stephen Doty*** (doty@math.luc.edu), Mathematics & Statistics, Loyola University Chicago, Chicago, IL 60660. *Integral second fundamental theorem of invariant theory for partition algebras.*

(Joint work with Chris Bowman and Stuart Martin.) There is a Schur-Weyl duality for a tensor power of a vector space, regarded as a bimodule for a symmetric group and partition algebra. We prove that the kernel of the action of the group algebra of the symmetric group is a cell ideal with respect to the alternating Murphy basis. This provides an analogue of the second fundamental theory of invariant theory for the partition algebra. The results are valid over an arbitrary integral domain. In consequence, the centralizer algebras of the partition algebra are cellular, and we provide an explicit cellular basis. We also prove similar results for the "half" partition algebras. (Received March 01, 2020)