

1145-05-2593

**Gene B. Kim\*** ([genebkim@usc.edu](mailto:genebkim@usc.edu)), 3620 S Vermont Ave, Department of Mathematics,  
University of Southern California, Los Angeles, CA 90089, and **Sangchul Lee**. *A bivariate central  
limit theorem for descents and major indices in fixed conjugacy classes.*

The distribution of descents in fixed conjugacy classes of  $S_n$  has been studied, and it is shown that its moments have interesting properties. Kim and Lee showed, by using Curtiss' theorem and moment generating functions, to prove a central limit theorem for descents in arbitrary conjugacy classes of  $S_n$ . In this paper, we prove a modified version of Curtiss' theorem to shift the interval of convergence in a more convenient fashion and use this to show that the joint distribution of descents and major indices is asymptotically bivariate normal. (Received September 25, 2018)