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Shigeo Koshitani* (koshitan@math.s.chiba-u.ac.jp), Mathematics, Graduate School of Science, Chiba University, 1-33 Yayoi-cho, Inage-ku, Chiba, Chiba 263-8522, Japan. *An application of the Hecke algebras of permutation representations to representation theory.*

In representation theory in Algebra or Geometry no matter what is, Hecke algebras play a very important role. Here by a Hecke algebra we mean one of the most classical ones, namely, the endomorphism ring (algebra) of a permutation representation. Almost forty years ago in his celebrated paper [Trans. A.M.S. 175 (1973)] Leonard Scott announced a wonderful result which is on lifting homomorphisms between two permutation modules of a finite group from a field of prime characteristic to the ring of local integers. In particular, we can compute the Hecke algebras of permutation modules in terms of ordinary representations. By using his result we can give several partial positive answers to Broue's abelian defect group conjecture which is one of the most important and interesting problems or conjectures in representation theory of finite groups and the conjecture is described in terms of derived equivalences. We shall present some results as applications of the theorem by Scott. (Received February 03, 2010)