1014-65-1303 **Kening Wang*** (`kwang@math.sc.edu`), Department of Mathematics, University of South Carolina, Columbia, SC 29208, and **Susanne C. Brenner**. *Domain Decomposition Preconditioners for C^0 Interior Penalty Methods.*

We study both the two-level additive Schwarz preconditioner and the Bramble-Pasciak-Schatz (BPS) preconditioner that can be used in the iterative solution of the discrete problems resulting from C^0 interior penalty methods for fourth order elliptic boundary value problems.

We show that the condition number of the preconditioned system for the two-level additive Schwarz preconditioner can be bounded by $C(1 + H/\delta)^3$, where H is the typical diameter of a subdomain, δ measures the overlap among the subdomains and the positive constant C is independent of the mesh sizes and the number of subdomains.

We also prove that the condition number of the BPS preconditioned system is of order $\mathcal{O}((1 + \ln(H/h))^2)$, where H and h represent the coarse mesh size and the fine mesh size respectively. (Received September 27, 2005)