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## HACP: An Ant-Based Partitioner for Grid Computing Applications \*

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### ABSTRACT

Efficient use of the distributed resources (computers, databases, and human expertise, etc.) requires that the computational load must be balanced across processors in a way that minimizes communications among processors and data moving. Multilevel partitioners such as Minex have been used for grid computing application in recent research works. In this paper, we present a novel map algorithm called HACP, an ACO algorithm coupled with a local search. ACO algorithm, due to their intrinsically distributed and multi-agent nature that well matches these types of architectures, can be very effective. To efficiently solve computational load-balance problems we give a parallel implement model for HACP. Experimental results demonstrate that HACP is much more efficient than the partitioning method in MinEx.

**Keywords:** Information Power Grid, Partitioning, Ant Colony Optimization, local search

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\* This work was supported by the Educational Ministry of Fujian Province, China under Grant No. JA02147.