An Experimental Study of Shock Wave Focusing by a Liquid Shock Tube(Part I)

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ABSTRACT

CELL FORMATION PROBLEM IS ONE OF THE MOST IMPORTANT PROBLEMS DURING THE MANUFACTURING PROCESS. DUE TO ITS NP-COMPLETE CHARACTERISTICS, IT IS DIFFICULT TO OBTAIN OPTIMAL CELL FORMATION IN AN ACCEPTABLE AMOUNT OF TIME. IN THIS STUDY, A TABU-BASED HEURISTIC ALGORITHM IS PRESENTED TO SOLVE THE PROBLEM. SINCE THE STRUCTURE OF GENERALIZED ASSIGNMENT PROBLEMS (GAP) IS EMBEDDED IN THE CELL FORMATION, A GOOD SOLUTION TO THE GAP IS BENEFICIAL IN OBTAINING SOLUTIONS OF CELL FORMATION PROBLEMS. A TABU SEARCH HEURISTIC ALGORITHM EMPLOYING BOTH LONG-TERM MEMORY AND DYNAMIC TABU LIST SIZE IS DESIGNED TO SOLVE THE GAP FIRST. THIS ALGORITHM IS THEN APPLIED TO SOLVING THE CELL FORMATION PROBLEMS. APART FROM TABU SEARCH, A LAGRAGIAN RELAXATION APPROACH IS ALSO PRESENTED TO COMPARE THE PERFORMANCE OF EACH METHOD WITH THOSE PUBLISHED IN THE LITERATURE. THE RESULTS INDICATE THAT BOTH PROPOSED METHODS ARE CAPABLE OF OBTAINING GOOD SOLUTIONS IN A REASONABLE AMOUNT OF TIME.

Keywords : CELL FORMATION, GENERALIZED ASSIGNMENT PROBLEM, ALTERNATIVE ROUTINGS, TABU SEARCH, LONG-TERM MEMORY, LAGRAGIAN RELAXATION

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