Improving Matrix-Matrix Multiplication in Algebraic Multigrid Context

Majid Rasouli
University of Utah
Salt Lake City, Utah
rasouli@cs.utah.edu

Hari Sundar
School of Computing, University of Utah
Salt Lake City, Utah
hari@cs.utah.edu

ABSTRACT

This paper provides a new method for matrix-matrix multiplication.

KEYWORDS

Algebraic Multigrid, AMG, Sparse, Computational Linear Algebra

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1 INTRODUCTION

This is intro.

2 METHODS

To compute the coarse matrix Ac, a triple matrix multiplication should be done:

$$Ac = R \times A \times P \tag{1}$$

in which $R = P^T$. We do it in two parts, performing matrix-matrix multiplications (MATMULT) twice: first $A * P$, then $R * (A * P)$.

The matrices are partitioned on multiple processors by row blocks (Figure 1). Matrices A and P have the same number of rows and consequently are partitioned the same way. R has less number of rows and has a different partition.

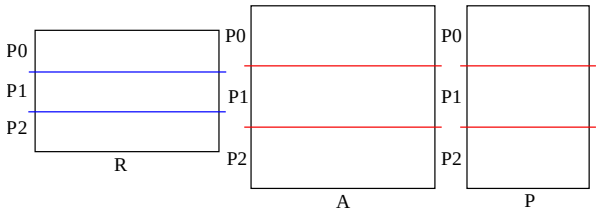

Figure 1

2.1 Part1

2.2 Part2

3 NUMERICAL RESULTS

This is results.

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