***CCIT Report No. 319***

# Numerical Weather Prediction on the Supercomputer Toolkit

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## ABSTRACT

The Supercomputer Toolkit constructs parallel computation networks by connecting processor modules. These connections are set by the user prior to a run and are static during the run. The Technion's Toolkit prototype was used to run a simplified version of the PSU/NCAR MM5 mesoscale model [11]. Each processor is assigned columns of the grid points of a square in the (x,y) space. When *n* x *n* columns are assigned to each processor its computation time is proportional to $n^2$ and its communication time to *n*. Since the Toolkit's network computes in parallel and communicates in parallel, then, for a given *n*, *the total time is independent of the size of the two dimensional array or the area over which the weather prediction takes place.*

A somewhat simplified mesoscale forecast over the eastern Mediterranean was run and measured; it suggests that were the Toolkit constructed from ALPHA processors, 10 processors would do a 36 h prediction in only about 13 minutes. A 36 hours prediction with full physics for the whole earth will require 2 hours for 80 ALPHA processors.