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Younbae Jun* (yjun@uwa.edu), University of West Alabama, Department of Mathematics,
Station 7, Livingston, AL 35470. *Domain decomposition method for solving three-dimensional
parabolic partial differential equations.*

A non-overlapping domain decomposition algorithm to solve three-dimensional parabolic partial differential equations is presented. It has been shown in this paper that the algorithm is unconditionally stable and efficient. Intuitively we would think that the computation time on the interface would have been a very small fraction, because the size of the linear system for the interface is in general much smaller than that of the system for the interior. Unlike two-dimensional problem, it has been found out that estimating the values of the points of the interface in three-dimensional problem is no longer negligible. This phenomenon is analyzed by spectral radii for the interface and interior region. (Received September 22, 2009)