

## Parallelization by Domain Decomposition for 1-D Sugarcane Equation with Message Passing Interface

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**Abstract :** In this paper we presented a method based on Domain Decomposition (DD) for parallelization of 1-D Sugarcane Equation on parallel platform with parallel paradigms on Master-Slave platform using Message Passing Interface (MPI). The 1-D Sugarcane Equation was discretized using explicit method of discretization requiring evaluation of temporal and spatial distribution of temperature. This platform gives better predictions of the effects of temperature distribution of the sugarcane problem. This work presented parallel overheads with overlapping communication and communication across parallel computers with numerical results across different block sizes with scalability. However, performance improvement strategies from the DD on various mesh sizes were compared experimentally and parallel results show speedup and efficiency for the parallel algorithms design.

**Keywords :** sugarcane, parallelization, explicit method, domain decomposition, MPI

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