



Iranian Journal of Physics Research, Vol. 10, No. 3, 2010

Research note

## Parallel PIC simulation for two stream instability

S Mohammadi and M Jazayeri

Iran University of Science & Technology

E-mail: jazsm@iust.ac.ir

(Received 26 February 2009 ; in final form 27 July 2010)

### Abstract

Two stream instability in plasma is simulated by PIC method. The execution time of the sequential and parallizable sections of the program is measured. The sequential program is parallelized with the help of the MPI functions. Then, the execution time of the sequential program versus the number of the grid points and the execution time of the parallel program on 3 and 5 processors versus the number of the grid points are obtained. Finally, by using these results the Speedup of the parallel program versus the number of the grid points is derived.

**Keywords:** two stream instability, PIC method, speedup, sequential program, parallel program

For the full article refer to the Persian section