

## عنوان مقاله:

On an Efficient Solution of the Boltzmann Equation Using the Modified Time Relaxed Monte Carlo (MTRMC) Scheme

## محل انتشار:

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## نویسندگان:

M. Eskandari - *Department of Mechanical Engineering, Amirkabir University of Technology, Tehran, Iran*

S. S. Nourazar - *Department of Mechanical Engineering, Amirkabir University of Technology, Tehran, Iran*

## خلاصه مقاله:

The study proposes a new method called MTRMC to simulate flow in rarefied regimes, which are important in various industrial and engineering applications. This new method utilizes a modified collision function with smaller number of inter-molecular collisions, making it more computationally efficient than the widely used direct simulation Monte Carlo (DSMC) method. The MTRMC method is used to analyze the flow over a flat nano-plate at various free stream velocities, ranging from low to supersonic speeds. The results are compared with those from DSMC and time relaxed Monte Carlo (TRMC) schemes, and the findings show that the MTRMC method is in good agreement with the standard schemes, with a significant reduction in computational expense, up to 51% in some cases.

## کلمات کلیدی:

Boltzmann equation, DSMC method, TRMC method, MTRMC method, Taylor series expansion, Nano-plate

## لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/1821846>

