**Adomian Decomposition Method for Nonlinear Thermal Convective Flow of a Nanofluid Between Vertical Channel with Radiation Effect**

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**ABSTRACT**

Main objective of this work is to investigate the effect of thermal radiation on nonlinear mixed convective flow of a nanofluid between two vertical parallel plates. The governing equations are transformed into a system of nonlinear differential equations using suitable non-dimensional transformations. The resulting differential equations are solved using an efficient Adomian decomposition method. The effects of the physical parameters on the developments of flow, temperature, nanoparticle volume fraction, heat transfer and nanoparticle mass transfer characteristics between parallel plates are given and the salient features are discussed. The combined effects of change in different physical parameters on different profiles are displayed graphically and quantitatively.

*Key words:* Nanofluid, Nonlinear thermal convection, Radiation effect, Vertical channel, Adomian decomposition method.