

Comments on the two published papers

By

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In

- 1. Numerical solution for boundary layer flow due to a nonlinearly stretching sheet with variable thickness and slip velocity [Eur. Phys. J. Plus (2013) 128: 100].**
- 2. Differential transformation method for studying flow and heat transfer due to stretching sheet embedded in porous medium with variable thickness, variable thermal conductivity, and thermal radiation [Appl. Math. Mech. -Engl. Ed., 35(11), 1387–1400 (2014)].**

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In the first paper [1], the authors numerically study the flow of an incompressible Newtonian fluid over a continuously stretching sheet with power law surface velocity, slip velocity and variable thickness using the finite difference method (FDM). The authors claimed that the problem is valid only for $m \neq 1$.

$m=2$ is one value used by the authors in their studies. It was found that :

1. b and f are not defined through the paper .

2. The unites of U_0, A, η, f, α and λ are :

$$[U_0] = L^{-1} s^{-1} ,$$

$$[A] = L^{3/2} ,$$

$$[\eta] = L ,$$

$$[f] = L^{-1} ,$$

$$[\lambda] = L^{-1/2} ,$$

$$[\alpha] = L .$$

Then Equations (7)-(9) are in dimensional form not as the authors reported that they are in dimensionless form . Then , the problem [1] is invalid .

In the second paper [2] , the authors investigated the problem of the boundary layer flow and heat transfer of a Newtonian fluid over a non-linear stretching sheet embedded in a porous medium with variable thickness and thermal radiation numerically using the differential transformation method (DTM) . Also, the authors claimed that the problem is valid only for $m \neq 1$.

For $m=2$ (this value used by the authors in their numerical results).It is easy to see that :

1. b and f are not defiend through the paper .

2. The unites of U_0, A, ζ, f, D and α are :

$$[U_0] = L^{-1} s^{-1} ,$$

$$[A] = L^{3/2} ,$$

$$[\zeta] = L ,$$

$$[D] = L^{-1} ,$$

$$[f] = L^{-1} ,$$

$$[\alpha] = L .$$

Where the authors defined U_0 is the reference velocity, A is a very small constant so that the sheet is sufficiently thin, η is dimensionless coordinate, λ is the slip velocity parameter, α is a parameter related to the thickness of the wall, ζ is a parameter related to the thickness of the wall, D is the porous parameter and L (length) and s (time). Then Equations (13)-(16) are in dimensional form in contrary to that the authors reported that they are in dimensionless form . This vital mistake i.e. the problem [2] is invalid.

Conclusions

In the above two papers the authors reported that their problems are valid only for $m \neq 1$. For a special value of $m = 2$ it was found that the problems are invalid . Consequently, the above two papers are invalid .

References

- [1] M.M.Khader and Ahmed M. Megahed , "Numerical solution for boundary layer flow due to a nonlinearly stretching sheet with variable thickness and slip velocity," Eur. Phys. J. Plus **128**: 100 (2013).
- [2] M.M.Khader and Ahmed M. Megahed ," Differential transformation method for studying flow and heat transfer due to stretching sheet embedded in porous medium with variable thickness, variable thermal conductivity, and thermal radiation," Appl. Math. Mech. -Engl. Ed., **35**(11), 1387–1400 (2014).