Review Form 1.6

Journal Name:	**Asian Research Journal of Mathematics**
Manuscript Number:	**Ms_ARJOM_77837**
Title of the Manuscript:	**EXISTENCE AND UNIQUENESS OF SOLUTION OF MAGNETOHYDRODYNAMIC BUOYANCY DRIVEN FLOW PAST A STRETCHING SHEET UNDER THE INFLUENCE OF VARIABLE VISCOSITY**
Type of the Article	**Original Research Article**

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PART 1: Review Comments

	Reviewer's comment	**Author's comment** *(if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)*
Compulsory REVISION comments	Under the transformations of Eqs. (9), Eq. (2) transforms to Eq. (10) where $\epsilon = \alpha A x$. The consequence of the dependence of ϵ on x is the dependence of the solutions for f and θ on x. This contradicts the declared dependence of f and θ on η only. The mathematical model represented by Eqs. (10-13) is thus, incorrect. To overcome this problem, I suggest that the surface temperature be chosen independent of x, and the buoyancy term in Eq. (2) be dropped. Thus, with $T_w = T_\infty + A$ and $T = T_\infty + A\theta$, Eqs. (2) and (3) transform to $f''' - \varepsilon\theta' f'' + e^{-\varepsilon\theta}\left(ff'' - f'^2 - Mf'\right) = 0$ (10) $\theta'' + P_r(f\theta' - R_a\theta) = 0$ (11) where $\varepsilon = \alpha A$. Conditions (12) and (13) are unchanged. The article is to be corrected accordingly. In particular, the term "Buoyancy Driven" in the title is to be dropped	
Minor REVISION comments	In their order of appearance, the following is noted. • κ should appear as κ_∞, in Eq. (3). • It would be useful to mention that B_0 is directed normal to the sheet. • μ_r is μ_∞. • Correct Eq. (12), writing $f'(0) = 1$. • ϵ, which should better be replaced by ε, is defined twice, incorrectly as $\epsilon = \frac{T - T_\infty}{T_w - T_\infty}$ and correctly as $\epsilon = \alpha(T_w - T_\infty)$. • $G_r = \frac{g\beta(T_w - T_\infty)}{b^2 c}$ should be corrected to $G_r = \frac{g\beta A}{b^2}$. • ν, which should appear as ν_∞, is introduced before it appears in the transformations of η and v in Eqs. (9). To avoid this, it is better not to introduce ν_∞, and to define the transformations of η and v as $\eta = (\rho b/\mu_\infty)^{\frac{1}{2}} y$ and $v = -(b\mu_\infty/\rho)^{\frac{1}{2}} f(\eta)$. • The differential equations in Eqs. (21-25) have already been stated in Eqs. (15-17) and (19-20). Only the boundary conditions in Eqs. (21-25) need to be stated. • f_w in Eq. (21) is not defined. According to Eqs. (12), $f_w = 0$. • α, which is used in the definition of μ, is used for $f''(0)$ in Eq. (23) {Note: In Eq. (16), $f'' = x_3$ and in Eq. (23) $x_3(0) = \alpha$.}. Note also that in Eq. (31) α of Eq. (23) is written as α_1! • β in Eq. (25) is not defined. Theorem 1 is, obviously, a general theorem for proving existence and uniqueness that is not the author's contribution. The following is noted.	

	• The theorem is stated without proof or reference to a literature source that includes a proof. • In its statement, the inequality $\|t - t_0\| \leq$ is missing its right hand side, and b in the inequality $\|x - x_0\| \leq b$ has already been used in the boundary condition (4), $u_w = bx$. • The symbol f has already been used in the transformation for v, Eqs. (9). Its role in the theorem, in relation to X is unclear. • The statement "solution $X(t)$ of the system (14) to (25)" should be corrected to "solution $X(t)$ of a system of the form (21) to (25)". • In Eq. (27), replace $\|x_{1j} - x_{2j}\|$ by $\|x_{1j} - x_{2j}\|$, and in Eq. (28) replace $\|x_j\|$ by $\|x\|$. • The sentence starting with "If the partial derivative…" is incomplete. Anyway, Theorem 1 has to be stated precisely, with reference. Theorem 2 is, apparently, an application of Theorem 1 to Eqs. (21-25). The following is noted. • The relation of Theorem 2 to Theorem 1 is unclear. • While α_1 appears in one of the boundary conditions of Eq. (31), α_2 does not appear at all. It is therefore incomprehensible to be stated between Eq. (31) and Eq. (32) that $\alpha_i, i = 1,2$ are "guess values that satisfy the boundary conditions"! • $x_j, j = 1 \rightarrow 5$ are functions that are dependent on η. Is $b_j \leq x_j < a_j$ for all $0 \leq \eta < \infty$? Why retain the $\|-1\|$ terms in some of Eqs. (36-48)?	
Optional/General comments	The introduction is informative.	

PART 2:

	Reviewer's comment	**Author's comment** *(if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)*
Are there ethical issues in this manuscript?	*(If yes, Kindly please write down the ethical issues here in details)*	

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