CORRIGENDUM


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Corrigendum


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1. On page 7, there is a typo in defining the magnetic parameter in equation (28). The momentum equation i.e. equation (8) on page 5 is

\[ \frac{\partial u}{\partial x} + v \frac{\partial u}{\partial y} = \nu \frac{\partial^2 u}{\partial y^2} - \frac{\sigma A_0^2 u}{\rho_{nf}}. \]

The magnetic interaction parameter defined in equation (28) on page 7 is

\[ M = \frac{\sigma B_0^2}{\rho_f U_0}. \]

The correct term in equation (28) is \( A_0 \) not \( B_0 \). Also the stretching sheet length \( L \) (meter) is missing in the numerator of equation (28). So the correct definition of the dimensionless magnetic parameter is

\[ M = \frac{\sigma A_0^2 L}{\rho_f U_0} = s^{-1} \frac{m}{m} = 1. \]

So the magnetic parameter becomes dimensionless.

2. On page 4, section 2.1 in [1], the extensional viscosity of the sheet (\( \mu_{sh} \)) is missing in equations (2)–(5). So the correct forms of equations (2)–(5) are

\[ \frac{\partial \sigma_{xx}}{\partial x} + \frac{\partial \sigma_{yx}}{\partial y} = \rho_{sh} U(x) \frac{d}{dx} U(x) - \frac{\sigma_{sh} A_0^2 U(x)}{\mu_{sh}}. \quad (2) \]

In equation (2), \( \sigma_{ii} \) is the stress tensor component of the sheet while \( \sigma_{sh} \) is the electric conductivity of the sheet. It is anticipated that \( \sigma_{xx} \) is a function of \( x \) only.

Integrating equation (2) through the sheet’s thickness from \( y = 0 \) to \( y = H(x) \), we have

\[ \int_0^{H(x)} \left( \frac{\partial \sigma_{xx}}{\partial x} + \frac{\partial \sigma_{yx}}{\partial y} \right) dy = \int_0^{H(x)} \left( \rho_{sh} U(x) \frac{d}{dx} U(x) - \frac{\sigma_{sh} A_0^2 U(x)}{\mu_{sh}} \right) dy \]

\[ \frac{d}{dx} H(x) \sigma_{xx} + \tau_{xx} = \rho_{sh} H(x) U(x) \frac{d}{dx} U(x) - \frac{\sigma_{sh} H(x) A_0^2 U(x)}{\mu_{sh}}. \quad (3) \]

\[ \frac{d}{dx} H(x) \sigma_{xx} + \mu_{sh} \left( \frac{\partial u}{\partial y} \right)_{y=H(x)} = \rho_{sh} H(x) U(x) \frac{d}{dx} U(x) - \frac{\sigma_{sh} H(x) A_0^2 U(x)}{\mu_{sh}}. \quad (4) \]
\[ \frac{E H_0 U_0}{\mu_{sh}(U(x))^2} \frac{d}{dx} U(x) + \frac{\partial u}{\partial y} \bigg|_{y=H(x)} + \frac{\sigma_{sh} H(x) A_0^2 U(x)}{\mu_{sh}} = 0. \]  

Equation (5) is the momentum equation for the elastic sheet. Here, we check whether equation (5) is consistent with different terms, or not? For this reason, the units of the following well-known quantities have been introduced.

\[ E = \text{Pa (Pascal)} = \frac{N}{m^2} = \frac{kg}{m \cdot s^2}, \]

\[ H(x) = H_0 = m A_0 = \frac{Wb}{m^2} = \text{kg s}^{-2} \text{A}^{-1} \]

\[ \mu_{sh} = \frac{kg}{m \cdot s}, \rho_{sh} = \frac{kg}{m^2}, \sigma_{sh} = \frac{A_m^2 s^3}{kg m}, \quad U(x) = \frac{m}{s}, U''(x) = \frac{1}{s}. \]

By inserting the corresponding units from equation (*) into (5), it is observed that the unit of each term of equation (5) is \( \frac{1}{s} \). This shows that equation (5) is consistent with different terms.

3. On page 4 in [1], the correct form of the momentum equation for the viscous sheet is

\[ \frac{d}{dx} \left( \frac{\mu_{sh}}{U(x)} \frac{d}{dx} U(x) - \frac{\rho_{sh} U(x)}{\mu_{sh}} \right) + \frac{\mu_{sh}}{H_0 U_0} \frac{1}{\frac{\partial u}{\partial y} \bigg|_{y=H(x)}} + H(x) \frac{\sigma_{sh} A_0^2 U(x)}{\mu_{sh}} = 0. \]  

By inserting the corresponding units from equation (*) into (5), it is perceived that the unit of each term of equation (6) is \( \text{kg (m^3 s)}^{-1} \). Therefore equation (6) is consistent with various terms. Equation (6) is the extension of equation (2.10) in Al-Housseiny and Stone [2] and is briefly explained there.

4. In the appendix (see page 18 of [1]), the correct forms of equations (A.5) and (A.6) are

\[ \left( \frac{E}{\rho_{sh}(U(x))^2} - 1 \right) U'(x) + \frac{\mu_{sh}}{\rho_{sh} H_0 U_0} \frac{1}{\frac{\partial u}{\partial y} \bigg|_{y=H(x)}} + H(x) \frac{\sigma_{sh} A_0^2 U(x)}{\mu_{sh}} = 0. \]  

\[ \frac{E H_0 U_0}{\mu_{sh}(U(x))^2} \frac{d}{dx} U(x) + \frac{\partial u}{\partial y} \bigg|_{y=H(x)} + \frac{\sigma_{sh} H(x) A_0^2 U(x)}{\mu_{sh}} = 0. \]

By introducing the corresponding units from equation (*) into (A.5), it is perceived that the unit of each term of equation (A.5) is \( \frac{1}{s} \). Therefore equation (A.5) is consistent with various terms. Both equations (A.6) and (5) are identical. So, the unit of each term of equation (A.6) is also \( \frac{1}{s} \). Therefore, equation (A.6) is also consistent.

5. On page 15 in [1], the following term is written as \( \frac{E}{\rho_{sh}(U(x))^2} = 29.62 \text{ m s}^{-1} \). Whereas the correct dimensionless equation is \( \frac{E}{\rho_{sh}(U(x))^2} = 29.62 \), which is without m s\(^{-1}\).

Remarks

All the equations are dimensionally correct now. There are no graphical profiles and tabular results obtained from equations (2)–(6), equation (A.5) and equation (A.6). So none of the calculations, discussion and conclusions of the paper are affected. All the profiles (velocity, temperature, Nusselt number, Skin friction coefficient) and tabular results have been obtained from the dimensionless equations (29)–(31), (35), (38) and (45).

The author apologises for any confusion that this transcription error may have caused.

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References
