Erratum: "Reflection of Generalized Magneto-Thermoelastic Waves With Two Temperatures Under Influence of Thermal Shock and Initial Stress" [Abo-Dahab, S. M., 2018, ASME J. Heat Transfer, 140(10), p. 102005; DOI: 10.1115/1.4040258]

S. M. Abo-Dahab

In this erratum, some misprints in the main published paper [1] have been corrected as follows:
Substituting from Eqs. (8) to (11) in published paper [1], the equations of motion (13) and (14), modified to

$$\rho\frac{\partial^2 u}{\partial t^2}=\left(\lambda+2\mu+\mu_e H_0^2\right)\frac{\partial^2 u}{\partial x^2}+\left(\lambda+\mu+\frac{1}{2}P+\mu_e H_0^2\right)\frac{\partial^2 v}{\partial x\,\partial y}+\left(\mu-\frac{1}{2}P\right)\frac{\partial^2 u}{\partial y^2}-\gamma\frac{\partial \mathrm{T}}{\partial x} \tag{1}$$

$$\rho\frac{\partial^2 v}{\partial t^2}=\left(\lambda+2\mu+\mu_e H_0^2\right)\frac{\partial^2 v}{\partial y^2}+\left(\lambda+\mu+\frac{1}{2}P+\mu_e H_0^2\right)\frac{\partial^2 u}{\partial x\,\partial y}+\left(\mu-\frac{1}{2}P\right)\frac{\partial^2 v}{\partial x^2}-\gamma\frac{\partial \mathrm{T}}{\partial y} \tag{2}$$

For simplicity, we will use the following nondimensional variables:

$$\begin{gathered}(x', y', u', v')=c_0\eta(x,y,u,v),\quad (t',\tau'_0)=c_0^2\eta(t,\tau_0),\quad (\theta',\phi')=\frac{(T,\phi)-T_0}{T_0}\\ \sigma'_{ij}=\frac{\sigma_{ij}}{2\mu+\lambda},\quad h'=\frac{h}{2\mu+\lambda},\quad P'=\frac{P}{2\mu+\lambda},\quad \tau'=\frac{\tau}{2\mu+\lambda}\end{gathered} \tag{3}$$

where $\eta=\rho C_E/K$, $C_2^2=\mu/\rho$ and $c_0^2=2\mu+\lambda/\rho$.
The equations of motion (13) and (14) in the main published paper [1] take the form

$$\frac{\partial^2 u}{\partial t^2}=\frac{\left(\lambda+2\mu+\mu_e H_0^2\right)}{\rho C_0^2}\frac{\partial^2 u}{\partial x^2}+\frac{\left(\lambda+\mu+\frac{P}{2}+\mu_e H_0^2\right)}{\rho C_0^2}\frac{\partial^2 v}{\partial x\,\partial y}+\frac{2\mu-P}{2\rho C_0^2}\frac{\partial^2 u}{\partial y^2}-\frac{\gamma T_0}{\rho C_0^2}\frac{\partial\theta}{\partial x} \tag{4}$$

$$\frac{\partial^2 v}{\partial t^2}=\frac{\left(\lambda+2\mu+\mu_e H_0^2\right)}{\rho C_0^2}\frac{\partial^2 v}{\partial y^2}+\frac{\left(\lambda+\mu+\frac{P}{2}+\mu_e H_0^2\right)}{\rho C_0^2}\frac{\partial^2 u}{\partial x\,\partial y}+\frac{2\mu-P}{2\rho C_0^2}\frac{\partial^2 v}{\partial x^2}-\frac{\gamma T_0}{\rho C_0^2}\frac{\partial\theta}{\partial y} \tag{5}$$

Assuming the scalar potential functions $\Phi(x, y, t)$ and $\Psi(x, y, t)$ defined by the relations in the nondimensional form

$$u=\frac{\partial\Phi}{\partial x}+\frac{\partial\Psi}{\partial y},\quad \mathrm{v}=\frac{\partial\Phi}{\partial \mathrm{y}}-\frac{\partial\Psi}{\partial \mathrm{x}} \tag{6}$$

Substituting from the above equation (6) into equation (4), we obtain

$$\begin{aligned}\frac{\partial^2}{\partial t^2}\left(\frac{\partial\Phi}{\partial x}+\frac{\partial\Psi}{\partial y}\right)&=\frac{\left(\lambda+2\mu+\mu_e H_0^2\right)}{\rho C_0^2}\frac{\partial^2}{\partial x^2}\left(\frac{\partial\Phi}{\partial x}+\frac{\partial\Psi}{\partial y}\right)\\&+\frac{\left(\lambda+\mu+\frac{P}{2}+\mu_e H_0^2\right)}{\rho C_0^2}\frac{\partial^2}{\partial x\,\partial y}\left(\frac{\partial\Phi}{\partial \mathrm{y}}-\frac{\partial\Psi}{\partial \mathrm{x}}\right)+\frac{2\mu-P}{2\rho C_0^2}\frac{\partial^2}{\partial y^2}\left(\frac{\partial\Phi}{\partial x}+\frac{\partial\Psi}{\partial y}\right)-\frac{\gamma T_0}{\rho C_0^2}\frac{\partial\theta}{\partial x}\end{aligned} \tag{7}$$

Separating the components of two sides concern x-axis and y-axis, anyone can get

$$\left[\nabla^2 - \frac{1}{a_2}\frac{\partial^2}{\partial t^2}\right]\Phi - a^*\,\theta = 0 \tag{8}$$

$$\left[\nabla^2 - \frac{1}{a_3}\frac{\partial^2}{\partial t^2}\right]\psi = 0 \tag{9}$$

where

$$a_0 = \frac{\gamma T_0}{\rho C_0^2},\quad a_1 = \frac{\rho C_0^2}{\mu},\quad R_H^2 = \frac{\mu_e H_0^2}{\rho\, C_0^2},\quad a_2 = 1 + R_H^2\,,\quad a^* = \frac{a_0}{a_2},\quad a_3 = \frac{2\mu - P}{2\rho\, C_0^2},\quad \nabla^2 = \frac{\partial^2}{\partial x^2} + \frac{\partial^2}{\partial y^2}$$

where, R_H^2 is the Alfven speed.

Finally, all next equations in Ref. [1] have not any misprints, and by making the numerical results, we can see that the final results are correct, because satisfying the nature of wave propagation and the boundary conditions for the phenomenon.

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Reference

[1] Abo-Dahab, S. M., 2018, "Reflection of Generalized Magneto-Thermoelastic Waves With Two Temperatures Under Influence of Thermal Shock and Initial Stress," ASME J. Heat Transfer, **140**(10), p. 102005.