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Erratum: “1.5D quasilinear model and its application on beams interacting with Alfven eigenmodes in DIII-D” [Phys. Plasmas 19, 092511 (2012)]

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We make the following corrections to typos we found in the original paper.1

In the abstract, the reference is to shot #112117 not #127112 [W. W. Heidbrink et al., Nucl. Fusion 48, 084001 (2008)].

Equation (13)
For consistency, we replace the variable q by e for the charge, since q is used as safety factor elsewhere. Equation (13) therefore reads as

\[ \gamma_k = \frac{e}{c} dP_\phi dE \left( \frac{n_d \cdot \delta E}{\omega} \right)^2 \delta(\Omega) \left( \omega \frac{\partial}{\partial E} + n \frac{\partial}{\partial P_\phi} \right) \]

where \( D_k = W_k \left( \frac{n_d \cdot \delta E}{\omega} \right)^2 \delta(\Omega) \) is the diffusion coefficient at the resonances in phase space.

Equation (17)
Equation (17) should be written as

\[ \frac{\partial \beta_{L_P}}{\partial r} \bigg|_{\text{crit}} = \gamma_d \frac{\gamma_L}{\gamma} \]

Equation (18)
\( \rho \) in Eq. (18) is \( \rho_s \)

\[ \frac{\gamma_{rad}}{\omega} = -3 \left( \frac{\sqrt{\rho_s^2} m (m + 1)}{r \sqrt{2}} \right)^{0.67} \]

where \( s \) is the local shear at the location of the mode, \( m \) is the poloidal mode number, \( \rho_s = c_s / \Omega_c \), with \( c_s = \sqrt{\gamma Z k T_e / m_i} \) is the ion sound speed, and \( \Omega_c \) is the ion gyro-frequency.

Equation (20)
The exponential in Eq. (20) for the electron landau damping is \(-1/s\) not \(-1/s\). We also correct the expression for \( G(\tilde{\epsilon}) \) and further explain some variables

\[ \frac{\gamma_{eL}}{\omega} = -\frac{\pi^{3/2}}{6} q^2 \frac{\beta_e}{\nu_e} \left( \frac{5}{2} \right) G(\tilde{\epsilon}) e^{-1/s} \]

and \( G(\tilde{\epsilon}) \approx 4.47 + 0.42 \tilde{\epsilon} + 0.02 \tilde{\epsilon}^2 \) not \( G(\tilde{\epsilon}) \approx 4.47 - 0.42 \tilde{\epsilon} + 0.02 \tilde{\epsilon}^2 \) as typed in the manuscript. \( s \) is the local shear \( s = (r/q) dq/dr \), where \( r \) is the radius and \( q \) is the safety factor. \( \tilde{\epsilon} = 2 \epsilon / (1 - \epsilon) \), where \( \epsilon = r / a \) with \( a \) minor radius of the plasma last close flux surface.

Equation (21)
There is a missing factor of \( (\pi/2)^2 \). Equation (21) should be

\[ \frac{\gamma_{eL_P}}{\omega} = \frac{1}{4} \left( \frac{\pi}{2} \right)^2 \left[ I_1 \left( \frac{8 \pi m q_s}{5 r \epsilon} \right)^2 + I_2 q^2 \frac{8 \beta_e}{1 + \sigma} \right] \sqrt{\frac{\nu}{\omega}} 
\times \left[ \ln \left( \frac{16 \sqrt{\nu / \rho_e}}{\sigma} \right) \right]^{-3/2} \]

Equation (25)
The diamagnetic frequency in Eq. (25) is

\[ \omega^* = \frac{n m q_s^2}{r_m \Omega_c} \frac{\partial \ln \beta}{\partial r} \]

where \( q_m \) and \( r_m \) are the safety factor and radius at the location of the toroidal Alfvenic eigenmodes mode. \( n \) is the toroidal mode number and \( \Omega_c \) is the fast ion cyclotron frequency.