

Erratum: Space-time evolution of nonlinear three-wave interactions. I. Interaction in a homogeneous medium*

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Please note the following corrections:

- Page 275: Column 1, Table of Contents item II. B.: Replace: "Applicatin" with: "Application".
 Column 2, line 4 from bottom: Replace: "Cullen, 1960;" with: "Tien, 1958;"
 Column 2, line 2 from bottom: After: "1962" add: "; Bloembergen, 1965; Akhmanov and Khokhlov, 1972"
- Page 276: Column 1, line 2 from top: After: "Svaasand, 1969;" add: "Lean and Tsang, 1970;"
 Column 1 line 3 from top. Delete: "Davis and Newhouse, 1975;"
 Column 1, line 10 from top: Correct: "1975" to read: "1975a"
 Column 1, Eq. (1.1a): Move over one space so that equal sign (=) lines up with those of Eqs. (1.1b) and (1.1c).
 Column 1, last paragraph, line 4: Replace: "Cullen" with: "Jurkus and Robson".
 Column 1 last paragraph, line 4: Delete: "Louisell, 1960;"
 Column 1, last paragraph, line 5: After: "Armstrong *et al.*, 1962;" add: "Bretherton, 1964;"
 Column 1, last paragraph, lines 5 and 6: Delete: "Liu and Aamodt, 1976".
 Column 1, line 5 from bottom: Correct: "Chu" to read: "Chiu"
 Column 2, line 12 from top: After: "features" insert: "(Reiman, 1977)"
- Page 277: Column 2, paragraph 4, line 10: Change: "We illustrate" to read: "Here, however, we illustrate"
 Column 2, last paragraph, line 3: Replace barred letters in: " $J(\bar{r}, t)$ " with boldface: " $\mathbf{J}(\mathbf{r}, t)$ " (2 boldface letters).
 Column 2, last paragraph, line 4: Replace barred letters in: " $\bar{E}(\bar{r}, t)$ " with boldface: " $\mathbf{E}(\mathbf{r}, t)$ " (2 boldface letters).
 Column 2, last paragraph, line 6: Replace barred letters in: " $\{\exp[i(\bar{k} \cdot \bar{r} - \omega t)] \text{ dependence}\}$ " with boldface: " $\{\exp[i(\mathbf{k} \cdot \mathbf{r} - \omega t)] \text{ dependence}\}$ " (2 boldface letters).
 Column 2, Eq. (1.4): Replace barred letters in: " $J_i(\bar{k}, \omega) = \sigma_{ij}(\bar{k}, \omega) E_j(\bar{k}, \omega)$ " with boldface: " $J_i(\mathbf{k}, \omega) = \sigma_{ij}(\mathbf{k}, \omega) E_j(\mathbf{k}, \omega)$ " (3 boldface letters).

- Page 278: Column 1 Eq. (1.5): Replace barred letters in: " $D_{ij}(\bar{k}, \omega) E_j(\bar{k}, \omega) = 0$ " with boldface: " $D_{ij}(\mathbf{k}, \omega) E_j(\mathbf{k}, \omega) = 0$ " (2 boldface letters).
 Column 1, Eq. (1.6): Replace barred letter in

$$D_{ij} = \left(1 - \frac{c^2 k^2}{\omega^2}\right) \delta_{ij} + \frac{c^2}{\omega^2} k_i k_j + \frac{i \sigma_{ij}(\bar{k}, \omega)}{\omega \epsilon_0}$$

with boldface:

$$D_{ij} = \left(1 - \frac{c^2 k^2}{\omega^2}\right) \delta_{ij} + \frac{c^2}{\omega^2} k_i k_j + \frac{i \sigma_{ij}(\mathbf{k}, \omega)}{\omega \epsilon_0}$$

(1 boldface letter).

Column 1, Eq. (1.7): Replace barred letters in: " $D(\bar{k}, \omega) = \det D_{ij}(\bar{k}, \omega) = 0$ " with boldface: " $D(\mathbf{k}, \omega) = \det D_{ij}(\mathbf{k}, \omega) = 0$ " (2 boldface letters).

Column 1, line following Eq. (1.7): Replace subscript and barred letter in: " $\omega(\bar{k}) \equiv \omega_{\bar{k}}$ " with boldface: " $\omega(\mathbf{k}) \equiv \omega_{\mathbf{k}}$ " (2 boldface letters).

Column 1, Eq. (1.8): Replace subscripts and barred letters in:

$$\bar{E}(\bar{r}, t) = \sum_{\bar{k}} \bar{E}_{\bar{k}} \exp[i(\bar{k} \cdot \bar{r} - \omega_{\bar{k}} t)]$$

with boldface:

$$\mathbf{E}(\mathbf{r}, t) = \sum_{\mathbf{k}} \mathbf{E}_{\mathbf{k}} \exp[i(\mathbf{k} \cdot \mathbf{r} - \omega_{\mathbf{k}} t)]$$

(8 boldface letters).

Column 1, third line above Eq. (1.9): Replace subscripts and barred letter in: " \bar{k} real $|\nu| \equiv |\text{Im} \omega_{\bar{k}}| \ll |\text{Re} \omega_{\bar{k}}|$ " with boldface: " \mathbf{k} real $|\nu| \equiv |\text{Im} \omega_{\mathbf{k}}| \ll |\text{Re} \omega_{\mathbf{k}}|$ " (3 boldface letters).

Column 1, second line above Eq. (1.9): Replace barred letter in: " $|\text{Im} D(\bar{k}, \omega)|$ " with boldface: " $|\text{Im} D(\mathbf{k}, \omega)|$ " (1 boldface letter).

Column 1, line above Eq. (1.9): Replace barred letter in: " $|\text{Re} D(\bar{k}, \omega)|$ " with boldface: " $|\text{Re} D(\mathbf{k}, \omega)|$ " (1 boldface letter).

Column 1, Eq. (1.9): Replace barred letters in: " $D_{ij}(\bar{k}, \omega) = 0$ giving $\omega(\bar{k})$ " with boldface: " $D_{ij}(\mathbf{k}, \omega) = 0$ giving $\omega(\mathbf{k})$ " (2 boldface letters).

Column 1, Eq. (1.10): Replace barred letter in: " $\nu(\bar{k})$ " with boldface: " $\nu(\mathbf{k})$ " (1 boldface letter).

Column 1, second line below Eq. (1.11): Re-

place barred letters in: “ (\bar{k}_m, ω_m) and (\bar{k}_n, ω_n) ”
 with boldface: “ (\mathbf{k}_m, ω_m) and (\mathbf{k}_n, ω_n) ” (2 bold-
 face letters).

Column 1, Eq. (1.12): Replace subscripts
 and barred letters in:

$$“\bar{E}(\bar{r}, t) = \sum_{\bar{k}} \bar{E}_{\bar{k}} u_{\bar{k}}(\bar{r}, t) \exp[i(\bar{k} \cdot \bar{r} - \omega t)]”$$

with boldface:

$$“\mathbf{E}(\mathbf{r}, t) = \sum_{\mathbf{k}} \mathbf{E}_{\mathbf{k}} u_{\mathbf{k}}(\mathbf{r}, t) \exp[i(\mathbf{k} \cdot \mathbf{r} - \omega t)]”$$

(9 boldface letters).

Column 1, first line after Eq. (1.12): Re-
 place barred letter in: “ \bar{r} ” with boldface:
 “ \mathbf{r} ” (1 boldface letter).

Column 1, first line after Eq. (1.12): Replace
 subscript in: “ $u_{\bar{k}}$ ” with boldface: “ $u_{\mathbf{k}}$ ” (1
 boldface letter).

Column 1, line 6 below Eq. (1.12): Correct:
 “amplitude” to read: “amplitudes”.

Column 1, line 7 below Eq. (1.12): Correct:
 “polarization” to read: “polarizations”.

Column 1, Eq. (1.13): Replace barred letters
 in: “ $\bar{k}_1 = \bar{k}_2 + \bar{k}_3$ ” with boldface: “ $\mathbf{k}_1 = \mathbf{k}_2 + \mathbf{k}_3$ ”
 (3 boldface letters).

Column 2, line 6: Replace barred letter in:
 “ $u(\bar{r}, t)$ ” with boldface: “ $u(\mathbf{r}, t)$ ” (1 boldface
 letter).

Column 2, line above Eq. (1.15): Replace sub-
 scripts “ k ” and barred letters in: “ $a_k(\bar{r}, t)$
 = $a_{k0} u_k(\bar{r}, t)$ ” with boldface: “ $a_{\mathbf{k}}(\mathbf{r}, t) = a_{\mathbf{k}0} u_{\mathbf{k}}(\mathbf{r}, t)$ ”
 (5 boldface letters).

Column 2, Eq. (1.15):

Replace subscripts “ k ” in:

$$“|a_{k0}|^2 = \left| \frac{w_{k0}}{\omega} \right| = \frac{\epsilon_0 E_{k0}^2}{4} \left| \frac{\partial D_k}{\partial \omega} \right|_{D_r=0}”$$

with boldface:

$$“|a_{\mathbf{k}0}|^2 = \left| \frac{w_{\mathbf{k}0}}{\omega} \right| = \frac{\epsilon_0 E_{\mathbf{k}0}^2}{4} \left| \frac{\partial D_{\mathbf{k}}}{\partial \omega} \right|_{D_r=0}”$$

(4 boldface letters).

Column 2, line after Eq. (1.15):

Replace subscripts “ k ” and barred letters
 in: “ $\bar{E}_k = \bar{\epsilon} E_{k0}$ and $(\partial D_k / \partial \omega) = e_i^* (\partial D_{ij}^h / \partial \omega) e_j$ ”
 with boldface: “ $\mathbf{E}_{\mathbf{k}} = \mathbf{e} E_{\mathbf{k}0}$ and $(\partial D_{\mathbf{k}} / \partial \omega)$
 = $e_i^* (\partial D_{ij}^h / \partial \omega) e_j$ ” (5 boldface letters).

Column 2, Eq. (1.16a):

Replace symbol and barred letter in:

$$“\left(\frac{\partial}{\partial t} + \bar{v}_1 \cdot \nabla + \nu_1 \right) a_1 = p_1 K a_2 a_3”$$

with boldface:

$$“\left(\frac{\partial}{\partial t} + \mathbf{v}_1 \cdot \nabla + \nu_1 \right) a_1 = p_1 K a_2 a_3”$$

(2 boldface letters).

Column 2, Eq. (1.16b):

Replace symbol and barred letter in:

$$“\left(\frac{\partial}{\partial t} + \bar{v}_2 \cdot \nabla + \nu_2 \right) a_2 = -p_2 K^* a_1 a_3^*”$$

with boldface:

$$“\left(\frac{\partial}{\partial t} + \mathbf{v}_2 \cdot \nabla + \nu_2 \right) a_2 = -p_2 K^* a_1 a_3^*”$$

(2 boldface letters).

Column 2, Eq. (1.16c):

Replace symbol and barred letter in:

$$“\left(\frac{\partial}{\partial t} + \bar{v}_3 \cdot \nabla + \nu_3 \right) a_3 = -p_3 K^* a_1 a_2^*”$$

with boldface:

$$“\left(\frac{\partial}{\partial t} + \mathbf{v}_3 \cdot \nabla + \nu_3 \right) a_3 = -p_3 K^* a_1 a_2^*”$$

(2 boldface letters).

Column 2, line after Eq. (1.16c):

Replace subscripts “ k ” in: “ $\omega > 0, p_k$
 = $\text{sgn}(w_{k0}) = \pm 1$ ” with boldface: “ $\omega > 0, p_{\mathbf{k}}$
 = $\text{sgn}(w_{\mathbf{k}0}) = \pm 1$ ” (2 boldface letters).

Column 2, Eq. (1.17):

Replace subscript and barred letters in:

“ $\bar{v}_k = \partial \omega / \partial \bar{k}$ ” and change with boldface: “ $\mathbf{v}_{\mathbf{k}}$
 = $\partial \omega / \partial \mathbf{k}$ ” (3 boldface letters).

Column 2, Eq. (1.18):

Replace barred letters in:

$$“|a_{10} a_{20} a_{30}|^{1/2} K = - \frac{\bar{E}_1^* \cdot \bar{J}_{2,3}^{(2)}}{4\omega_1} = \frac{\bar{E}_2 \cdot \bar{J}_{1,-3}^{(2)*}}{4\omega_2} = \frac{\bar{E}_3 \cdot \bar{J}_{1,-2}^{(2)*}}{4\omega_2}”$$

with boldface:

$$“|a_{10} a_{20} a_{30}|^{1/2} K = - \frac{\mathbf{E}_1^* \cdot \mathbf{J}_{2,3}^{(2)}}{4\omega_1} = \frac{\mathbf{E}_2 \cdot \mathbf{J}_{1,-3}^{(2)*}}{4\omega_2} = \frac{\mathbf{E}_3 \cdot \mathbf{J}_{1,-2}^{(2)*}}{4\omega_2}”$$

(6 boldface letters).

Column 2, fourth line after Eq. (1.18): Re-

place symbol and barred letter in: “ $\bar{v} \cdot \nabla$ ”
 with boldface: “ $\mathbf{v} \cdot \nabla$ ” (2 boldface letters).

Column 2, eighth line after Eq. (1.18): Re-

place symbol and barred letter in: “ $\bar{v} \cdot \nabla$ ”
 with boldface: “ $\mathbf{v} \cdot \nabla$ ” (2 boldface letters).

Column 2, tenth line after Eq. (1.18) (end of
 paragraph): Add the following: “[Note: The

wave subscripts (1, 2, 3) in this subsection
 are the same as, respectively, (i, j, k) in
 Eqs. (1.1a – 1.1c), and should not be confused
 with subscripts used later in the IST notation.]”.

Column 2, line 15 from bottom: After:

“(Bloembergen, 1965” add: “; Akhmanov and
 Khokhlov, 1972)”.

Page 279: Column 1, line 3 from top: Change: “ma-
 terials, semiconductors, and ferrites” to
 read: “materials such as semiconductors
 and ferrites,”.

Column 1, line 7 from top: After: “waves”
 add: “(Cullen, 1958; Tien, 1958)”.

Column 1, line 14 from top: Delete: “(Cul-
 len, 1960)”.

Column 1, line 17 from top: Delete: “and
 1961”.

Column 2, line 1 from top: Correct: “Chu”
 to read: “Chiu”.

Column 2, line 15 from top: Correct: “Dubois
 and Goldman, 1967;” to read: “DuBois and
 Goldman, 1965, 1967;”

- Column 2, line 19 from top: After: "Hasegawa, 1975" add: "; Liu and Aamodt, 1976; Kerst and Raether, 1976"
- Column 2, line 25 from top: After: "Ott, 1975;" add: "Berger and Perkins, 1976;"
- Column 2, second line after Eq. (1.19c): Delete: "(Armstrong *et al.*, 1962)".
- Column 2, fourth line after Eq. (1.19c): After: "independently by" add: "Jurkus and Robson (1960),".
- Column 2, line 8 from bottom: After: " $|a_j| \ll |a_i|$ " add: "(Kulberg, 1975)".
- Page 280: Column 1, second line after Eq. (1.21): Delete: "(Kulberg, 1975)".
- Column 2, line 3 from top: Correct: "(1.25) can be" to read: "(1.25) can again be".
- Column 2, line 4 from top: Delete: "(Jurkus and Robson, 1960)".
- Column 2, fifth line after Eq. (1.26): Change: "monotonic." to read: "monotonic in x ".
- Page 281: Column 1, line 9 from top: Correct: "explosivelike" to read: "explosive-like".
- Column 2, line 9 from top: Correct: "an an" to read: "as an".
- Page 282: Column 1, lines 20–21 from top: The following should be in italics: "the three envelopes initially are well separated or have small overlap".
- Column 1, line 8 from bottom: Correct: "date" to read: "data".
- Page 283: Column 1, line 3 from bottom: Change: "middle envelope" to read: "middle (velocity) envelope".
- Page 284: Column 1, line 15 from bottom:
- The expression: " $\int_{-\infty}^{\infty} q dx$," should read:
- $$A = \int_{-\infty}^{\infty} q dx,$$
- Column 1, line 12 from bottom:
- The expression: " $\int_{-\infty}^{\infty} |q| dx$." should read:
- $$\bar{A} = \int_{-\infty}^{\infty} |q| dx.$$
- Page 285: Column 2, fourth line above Eq. (3.3): Change: "(Reiman *et al.*, 1977)." to read: "(Bers and Reiman, 1975)."
- Column 2, first column of Table I: Correct: " $p_i = p_j = -p_k$ " to read: " $-p_i = p_j = p_k$ ".
- Column 2, in footnote to Table I. Insert below the footnote: "[Note exception: In Sec. I.B. subscripts (1, 2, 3) are the same as the plasma notation (i, j, k), respectively.]".
- Page 286: Column 2, line 2 of the caption of Fig. 3: Correct: " $p_j = p_k = p_i$ " to read: " $p_j = p_k = -p_i$ ".
- Page 288: Column 1, line 3 of the caption of Fig. 5: Correct: " $(t=0)$ " to read: " $(t=0)|$ ".
- Page 289: Column 1, paragraph 2, last line: Correct: " $p=0$ " to read: " $\rho=0$ ".
- Page 293: Column 2, Eq. (5.1): Correct: " $(\gamma_1, \gamma_2, \gamma_3) = (-, -, +)$ " to read: " $(\gamma_1, \gamma_2, \gamma_3) = (-, -, +)$ ".
- Page 295: Column 1, line 12 above Eq. (5.3a): Change: "energy" to read: "action".
- Column 1, line 11 above Eq. (5.3a): Change: "energy to the incident energy" to read: "action to the incident action".
- Column 1, line 6 above Eq. (5.3a): Change: "energy" to read: "action".
- Page 298: Column 1, Eq. (A3): Change: " $\gamma_i = \text{sgn}(E_i \times \omega_i)$," to read: " $\gamma_i = \text{sgn}(w_i \times \omega_i)$ ".
- Column 1, first line below Eq. (A3): Replace " E_i " with: " w_i ".
- Page 300: Column 2, line 2 from top: Correct: "A22b" to read: "A22a".
- Page 308: Column 2, in between references Akhmanov *et al.*, and Allis *et al.*: Insert: "Akhmanov, S. A., and R. V. Khokhlov, 1972, *Problems of Nonlinear Optics* (Gordon and Breach, New York)".
- Column 2, in between references Benney *et al.*, and Bers, 1975a.: Insert: "Berger, R. L., and F. W. Perkins, 1976, *Phys. Fluids* 19, 406".
- Page 309: Column 1, in between references Craik, 1978 and Cullen, 1960: Insert: "Cullen, A. L., 1958, *Nature*, 181, 332".
- Column 1, in reference Cullen, 1960 (line 22 from top): Correct: "IEF" to read: "IEE".
- Column 1, in reference Engelbrecht, 1958 (line 33 from top): Correct: "Engelbrecht," to read: "Engelbrecht, R. S.,".
- Column 1, in reference Jurkus, *et al.*, 1961 (line 55 from top): Delete: "Jurkus, A., and P. N. Robson, 1961, *Proc. IRE* 49, 1433".
- Column 1, in between references Kravstov and Lamb: Insert: "Kulberg, C. M., 1975, S. M. Thesis, M. I. T. (unpublished)".
- Column 2, in between references Laval *et al.*, and Liu *et al.*: Insert: "Lean, E. G., and C. C. Tsang, 1970, *J. Appl. Phys.* 41, 3912".
- Column 2, in reference Rayleigh, *Phil. Mag.* 16, 50 (line 27 from top): Correct: "1833" to read: "1883".
- Column 2, in between references Svaasand and Tien *et al.*: Insert: "Tien, P. K. 1958, *J. Appl. Phys.* 29, 1347".

The above represent those corrections which were communicated by one of the authors to the journal, but were not incorporated into the final printed paper. We apologize to the authors and to our readers for these errors.

Please note that the above corrections have been incorporated into the text of the reprints of the paper. The reprints, therefore, are copies of a newly printed version of the corrected paper.