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Erratum

On the steady state of nonlinear quasiresonant Alfvén oscillations in one-dimensional magnetic cavity

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The following corrections should be instroduced in the paper:

1. In Sect. 3, lines preceeding Eq. (22), it should be $|n|$ instead of n.
2. The sign of the right-hand sides of Eqs. (34), (36) and of the first sum on the right-hand side of Eq. (44) has to be changed.
3. There must be '$+$' instead of '$-$' between two terms in the large brackets in Eq. (49).
4. The quantity $(f^3)_n - f_n \sum_{m=-\infty}^{\infty} |f_m|^2$ has to be substituted for the quantity $(f^3)_n$ in Eqs. (58), and (64), and on the left-hand side of Eq. (65). The quantity $f^3 - f \sum_{m=-\infty}^{\infty} |f_m|^2$ has to be substituted for the quantity f^3 on the right-hand side of Eq. (65).
5. The quantity 2–3β has to be substituted for the quantity 2–5β in Eqs. (73), (75), (76) and (82).
6. The second sentence in the last paragraph on p. 294 has to be: "The discriminant of the cubic equation $D(\sigma) = 0$ is $d^3(4 - 27d)$."
7. The text starting from the second paragraph on p. 295 has to be:

   ii) $0 < d < \frac{4}{27}$. There are three real roots $\sigma_1 < \sigma_2 < \sigma_3 < 0$ to Eq. (77). It is obvious that $D < 0$ when either $\sigma < \sigma_1$ or $\sigma_2 < \sigma < \sigma_3$, while $D > 0$ otherwise. Since $\sigma_1 + \sigma_2 + \sigma_3 = -1$, it follows that $\sigma_1 < -\frac{1}{3}$, so that always $\sigma > \sigma_1$. Since $D(\sigma_0) < 0$ ($\sigma_0 = -d + \frac{3}{8}d(3d)^{1/2} > -\frac{1}{9}$), we obtain that $\sigma_3 > -\frac{1}{9}$, while $\sigma_2 > -\frac{1}{9}$ when $d < \frac{2}{27}$, and $\sigma_2 < -\frac{1}{9}$ when $d > \frac{2}{27}$. Since $\sigma > -\frac{1}{9}$, it follows that $D(\sigma) < 0$ when either $0 < d < \frac{2}{27}$ and $\sigma_2 < \sigma < \sigma_3$, or $\frac{2}{27} \le d < \frac{4}{27}$ and $-\frac{1}{9} < \sigma < \sigma_3$. Otherwise $D(\sigma) > 0$.

   Summarizing the analysis we state that there are three roots to Eq. (74) when

   $$-\tfrac{8}{27} < C < -\tfrac{4}{27}, \quad \sigma_2 + \tfrac{1}{9} < \kappa < \sigma_3 + \tfrac{1}{9}, \quad \text{or} \quad -\tfrac{4}{27} \le C \le 0, \quad 0 < \kappa < \sigma_3 + \tfrac{1}{9}. \tag{79}$$

   Otherwise there is only one real root to Eq. (74). Examples of unique and triple solutions are shown in Figs. 4*a* and 5*a* respectively.

   In terms of Δ and R conditions (79) are rewritten as

   $$\Delta_3 < \Delta < \Delta_2 \le \Delta_c \equiv -\frac{3}{8}\left[\frac{2-3\beta}{\pi^2\beta(1-\beta)}\right]^{1/3}, \tag{80}$$

   where $\Delta_{2,3}(\beta, R)$ are obtained by inverting the relations

   $$R = \frac{1}{2|\Delta_{2,3}|}\left[\frac{3}{1 + 9\sigma_{2,3}(\Delta_{2,3})}\right]^{1/2}. \tag{81}$$

   Note that the dependences of $\Delta_{2,3}(\beta, R)$ on R are given by the asymptotic formulae

   $$\Delta_2 \simeq 2^{1/3}\Delta_c, \quad \Delta_3 \simeq -\frac{R^2}{8\pi^2}\frac{2-3\beta}{\beta(1-\beta)}, \tag{82}$$

   valid for $1 \ll R < \epsilon^{-1/2}$. The upper bound of R is necessary since the quasiresonant perturbation scheme adopted in Eq. (19) requires $\max|\Delta| = \mathcal{O}(\epsilon^{-1})$.

   It can be shown that the equation for $|V_1|^2$ has only one positive real root for all values of R when $\Delta = 0$. The dependencies of Δ_c on β, and Δ_2 and Δ_3 on R for $\beta = 0.1$, are shown in Figs. 2 and 3 respectively.
8. The inequality on the line preceeding Eq. (85) has to be $|\Delta| = |\Delta_3| \gg 1$.
9. The equality on the line preceeding Eq. (88) has to be $\Delta = \Delta_3$.
10. The interval of Δ variation in Sect. 5.2 has to be [0.15,0.21] instead of [0.20,0.23].
11. Sect. 6:
    - On the the first line it has to be $0.15 \le \Delta \le 0.21$ instead of $0.20 \le \Delta \le 0.23$.
    - On the eighth line it has to be $\Delta = 0.16$ instead of $\Delta = 0.2$.
    - On the third line of the third paragraph it has to be $\Delta = 0.18$ instead of $\Delta = 0.22$.
12. In Sect. 7, p. 298, the second colomn, it has to be
    - on line 6: $\Delta_3(\beta, R) < \Delta < \Delta_2(\beta, R) < 0$ instead of $\Delta_R(\beta, R) < \Delta < \Delta_c(\beta) < 0$;

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- on line 9: $\Delta_c(\beta) < \Delta < \Delta_{s1} \approx 0.15$ instead of $\Delta_c(\beta) < \Delta < \Delta_{s1} \simeq 0.2$;
- on line 11: $\Delta_{s1} < \Delta < \Delta_{s2} \approx 0.21$ instead of $\Delta_{s1} < \Delta < \Delta_{s1} \simeq 0.23$;
- on line 18: $\Delta = 0.18$ instead of $\Delta = 0.22$.

13. Fig. 2 remains qualitatively the same, but β varies from 0 till 0.70.
14. The new Fig. 3 is:

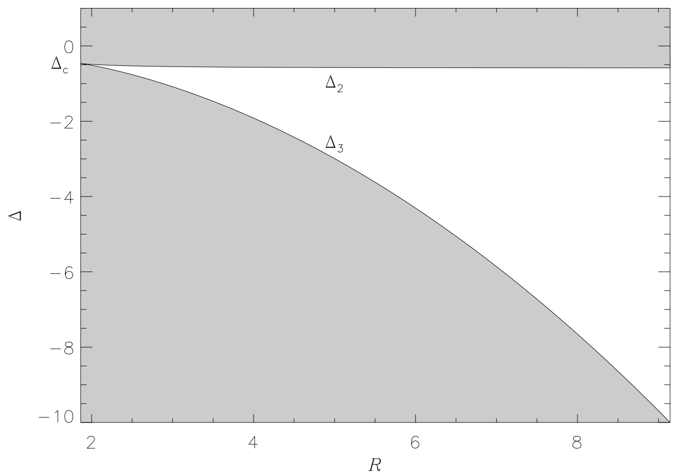

Fig. 3. The dependence of Δ_2 and Δ_3 on R for $\beta = 0.1$. Unique (triple) solutions exist in the shaded (non-shaded) area.

15. Fig. 6 is practically the same, but Δ_R and Δ_c at the horisontal axis has to be substituted by Δ_3 and Δ_2 respectively.
16. Fig. 7 is practically the same, but in the caption it has to be $\Delta = 0.16$ instead of $\Delta = 0.2$.
17. Fig. 8 is practically the same, but in the caption it has to be $\Delta = 0.18$ instead of $\Delta = 0.22$.