Correction to our paper : Existence of nonnegative solutions of some semilinear elliptic equations

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Under the condition (F_2), Theorem 2 is not necessarily valid. The assumptions on a_ℓ and b_ℓ in (F_2) must be changed to the following :
$a_\ell(x)$ and $b_\ell(x)$ are continuous functions in $\overline{\Omega}$ ($\ell = 1, 2$) which may change sign in Ω, and there exist a sphere $B_r(x_0)$ ($\subset \Omega$) with centre x_0 and radius r and a number $\delta > 0$ such that

$$a_1(x) \geqq \delta \quad \text{in } B_r(x_0), \; a_2(x) \geqq 0 \quad \text{in } \Omega - B_r(x_0)$$

and

$$a_2(x) \geqq -\varepsilon z(x) \quad \text{in } B_r(x_0),$$

where $z(x)$ is the positive eigenfunction corresponding to the principal eigenvalue μ_0 of the eigenvalue problem :

$$\begin{cases} -\Delta z = \mu z & \text{in } B_r(x_0), \\ z = 0 & \text{on } \partial B_r(x_0), \end{cases}$$
$$\mathrm{Max}\,\{z(x) \mid x \in B_r(x_0)\} = 1$$

and ε is an arbitrary nonnegative constant satisfying

$$\varepsilon \leqq \mu_0 [(1-p)/p] \cdot [p\delta/\mu_0]^{\frac{1}{1-p}}.$$

Under the above revised assumption (F_2), Lemma 1 and Theorem 2 are valid.

In the proof of Lemma 1, we set $s = [p\delta/\mu_0]^{\frac{1}{1-p}}$ and put

$$\varphi(x) = \begin{cases} s\, z(x) & \text{in } B_r(x_0) \\ 0 & \text{in } \overline{\Omega} - B_r(x_0). \end{cases}$$

Using (F_2), $\varphi(x)$ satisfies in $B_r(x_0)$

$$\begin{aligned}\Delta\varphi+f(x,\ \varphi) &\geqq \Delta(sz)+a_1(x)(sz)^p+a_2(x)\\ &\geqq -\mu_0 sz+\delta(sz)^p-\varepsilon z\\ &\geqq z^p\ \{\delta s^p-\mu_0 s-\varepsilon\}\geqq 0\end{aligned}$$

and in $\Omega-\overline{B_r(x_0)}$, $\Delta\varphi+f(x,\ \varphi)\geqq 0$.