ERRATA

In the article, "Regularized Newton Method for the Solution on Nonlinear Boundary-Value Problems" (Ukrainsk. Math. J., 22, No. 4 (1970)), clause 5 of Theorem 1 was incorrectly stated through an oversight on my part. Beginning with that clause, the theorem should properly read as follows: "5) the set D is closed and compact, and the parameters α_k are chosen so that the inequality $\|g(x_k - \alpha_k z_k)\| < \|g(x_g)\|$ holds for

every k , the series $\sum_{i=1}^{\infty} \alpha_i$ diverges, and $0 < \alpha_k \leq [2(a_1^2 + \delta_k \rho_1) - \beta]/(bc + a_2^2)$, $\beta > 0$, then there exists in D a set G of elements $\bar{x}$ on which $\Gamma^*(\bar{x})g(\bar{x}) = 0$ and $\inf_G \|x_k - \bar{x}\| \rightarrow 0$ as $k \rightarrow \infty$ if x_k is determined by the iterative process (3)." The proof of the theorem, beginning with the estimate $\|g_{k+p+1}\|^2$, also needs to be corrected. We have: $\|g_{k+1}\|^2 = \|g(x_k - \alpha_k z_k)\|^2 \leq \|g_k\|^2 - 2\alpha_k(\tilde{\Gamma}_k z_k, g_k) + \alpha_k^2 a_2^2 \|z_k\|^2$, where $\tilde{\Gamma}_k = \int_0^1 \Gamma(x_k - \tau \alpha_k z_k) d\tau$. Taking a lower estimate of $(\tilde{\Gamma}_k z_k, g_k)$, we obtain $\|g_{k+1}\|^2 \leq \|g_k\|^2 - \alpha_k[2(a_1^2 + \delta_k \rho_1) - \alpha_k(bc + a_2^2)] \cdot \|z_k\|^2 \leq \|g_k\|^2 - \alpha_k \beta \|z_k\|^2$. Hence, $\alpha_k \|z_k\|^2 \leq (1/\beta) [\|g_k\|^2 - \|g_{k+1}\|^2]$, $\sum_{i=k}^{k+p} \alpha_i \|z_i\|^2 \leq (1/\beta) [\|g_k\|^2 - \|g_{k+p+1}\|^2]$. Since the series $\sum_{i=1}^{\infty} \alpha_i$ diverges, it follows that $\|z_i\| \rightarrow 0$ as $i \rightarrow \infty$. It then follows from (3) that $\|\Gamma^*(x_k)g(x_k)\| \rightarrow 0$ as $k \rightarrow \infty$. We pick from $\{x_k\}$ a subsequence $\{x_{k_i}\}$ that converges to some element $\bar{x}$. Passage to the limit in (3) yields $\Gamma^*(\bar{x})g(\bar{x}) = 0$, which proves the existence of the set G . We now assume that $\inf_G \|x_k - \bar{x}\| \geq c_0 > 0$ for all $k \geq k_0$. We define a set D^* of elements x as follows: $\inf_G \|x - \bar{x}\| \geq c_0$. But $\|\Gamma^*(x_k)g(x_k)\| \geq c_1 > 0$ for all $k \geq k_0$ in the closed set $D \cap D^*$, contradicting the convergence of $\|\Gamma_k^* g_k\|$ to zero. Consequently, our assumption is false, and $\inf_G \|x_k - \bar{x}\| \rightarrow 0$ as $k \rightarrow \infty$. Also in need of a corresponding correction is Remark 1 to Theorem 1: it should be assumed in the second part of the remark that the series $\sum_{k=1}^{\infty} \beta_k$ is divergent, where $\beta_k = \alpha_k[2\delta_k \rho_1 - \alpha_k(bc + a_2^2)] > 0$.

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