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Erratum

Lower Bounds for Some Factorable Matrices

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The purpose of this erratum is to correct both the mathematical and typographical errors made in 2006.

The typos are as follows.

(i) Page 2, line 17, t_0 should read t_0^p.

(ii) Page 3, line 5, $j = r+2$ should read $j = r+1$.

(iii) Page 3, line 15, Δyr^p should read Δy_r^p.

(iv) Page 3, line 16 should read

$$g(r) - g(r+1) = (r+2)a_{r+1}^p \Delta y_r^p + (r+2)\Delta y_r^p \sum_{j=r+2}^{\infty} a_j^p. \tag{1.1}$$

(v) Page 4, line 7, $q < t < 1$ should read $r > 0$.

(vi) Page 4, line 11, $v(r)$ should read $u(r)$.

(vii) Page 6, line 17 $(t^{r+1}/(r+2))^p$ should read $(t^{r+1}/(r+2))^p \times$.

(viii) Page 6, line 18, $=$ should read $\times$.

(ix) Page 7, line 6, $-1p]$ should read $-1]$.

(x) Page 7, line 21 $(n+1)^{s-1}$ should read $(n+1)^{1-s}$.

(xi) Page 8, line 7, $q(p-1)$ should read $p(p-1)$.

(xii) Page 8, line 14, $(r+1)^{s-1} - (r+2)^{s-1}$ should read $(r+1)^{p-1} - (r+2)^{p-1}$.

(xiii) Page 8, line 16, $(j+1)^{(p-1)s}$ should read $(j+1)^{(s-1)p}$.

(xiv) Page 10, line 12, $\geq P_r(r+1)$ should read $\geq 1/(r+1)$.

(xv) Page 10, line 14, $(r+1)P_r^p$ should read $(r+1)$.

(xvi) Page 10, line 14, $P_{r+1}^{p}[$ should read $[$.
(xvii) Page 10, lines 15, 16, $P_{r+1}^{p}[$ should read P_r^p.
(xviii) Page 10, line 17, $p_{r+1}/P_r)$ should read $p_{r+1}/P_r)^p$.
(xix) Page 12, line 7, $+(r+2)^{\alpha}$ should read $+(r+2)^{2\alpha}$.

The mathematical errors occur showing that $\lim_r h(r) = 0$ in Theorems 6 and 7.

In Theorem 6, from the formula on line 2 of page 4,

$$\begin{aligned}
\lim_r h(r) &= \lim_r \frac{a_{r+1}^{p}\Delta y_r^p}{\Delta^2 y_r^p} \\
&= \lim_r \frac{[(r+1)^p-(r+2)^p]}{(r+2)^s[(r+1)^p-2(r+2)^p+(r+3)^p]} \\
&= \lim_r \frac{(1/(r+2)^s)[1-((r+2)/(r+1))^p]}{(1-2((r+2)/(r+1))^p+((r+3)/(r+2))^p)} \\
&= ((-s/(r+2)^{s+1})[1-((r+2)/(r+1))^p] \\
&\quad -(-p/(r+2)^s)((r+2)/(r+1))^{p-1}(-1/(r+1)^2)) \\
&\quad /(-2p((r+2)/(r+1))^{p-1}(-1/(r+1)^2) \\
&\quad +p((r+3)/(r+1))^{p-1}(-2/(r+1)^2)) \\
&= \lim_r ((-s(r+1)^2/2p(r+2)^{s+1})[1-((r+2)/(r+1))^p] \\
&\quad +(1/(r+2)^s)((r+2)/(r+1))^{p-1}) \\
&\quad /(((r+2)/(r+1))^{p-1}-((r+3)/(r+1))^{p-1}) \\
&= \lim_r \frac{(-s(r+1)/2p(r+2)^{s+1})[(r+1)^p-(r+2)^p]+((r+2)^{p-1}/(r+2)^s)}{(r+2)^{p-1}-(r+3)^{p-1}} \\
&= \lim_r \frac{(-s(r+1)/2p(r+2)^s)[((r+1)/(r+2))^p-1]+1/(r+2)^s}{1-((r+3)/(r+2))^{p-1}} \\
&= \lim_r (-s(r+2)^2/2p)((r+2-s(r+1))/(r+2)^{s+1})(((r+1)/(r+2))^p-1) \\
&\quad -(s/2p(r+2)^{s-1})((r+1)/(r+2))^p-(s/(r+2)^{s-1}) \\
&\quad /(p-1)((r+3)/(r+2))^{p-2} = \lim_r A,
\end{aligned} \tag{1.2}$$

where

$$A = \frac{-s(r+2-s(r+1))}{2p(p-1)(r+2)^{s-1}}\left(\left(\frac{r+1}{r+2}\right)^p-1\right). \tag{1.3}$$

If $s \geq 2$, then, clearly $\lim_r A = 0$. Suppose that $1 < s < 2$,

$$\begin{aligned}\lim_r A &= \lim_r \frac{(-s/2p(p-1))\left[((r+1)/(r+2))^p - 1\right]}{(r+2)^{s-1}/(r+2-s(r+1))} \\ &= \frac{(-s/2)((r+1)/(r+2))^{p-1}}{((r+2)^2(s-1)/(r+2-s(r+1))^2)\left[r+2-s(r+1)+r+2\right]} = 0.\end{aligned} \tag{1.4}$$

Thus g is monotone decreasing in r. The balance of the proof of [1, Theorem 6] is correct, and $L^p = f(\infty)$.

In Theorem 7,

$$h(r) = \frac{\left[(r+1)^p - (r+2)^p\right]}{(r+1)^p\left[(r+1)^p - 2(r+2)^p + (r+3)^p\right]}, \tag{1.5}$$

which is the same h as in Theorem 6, with s replaced by p. Therefore, $\lim_r h(r) = 0$. In the proof of Theorem 7, $g(0) \leq 0$, so $L^p = f(0)$.

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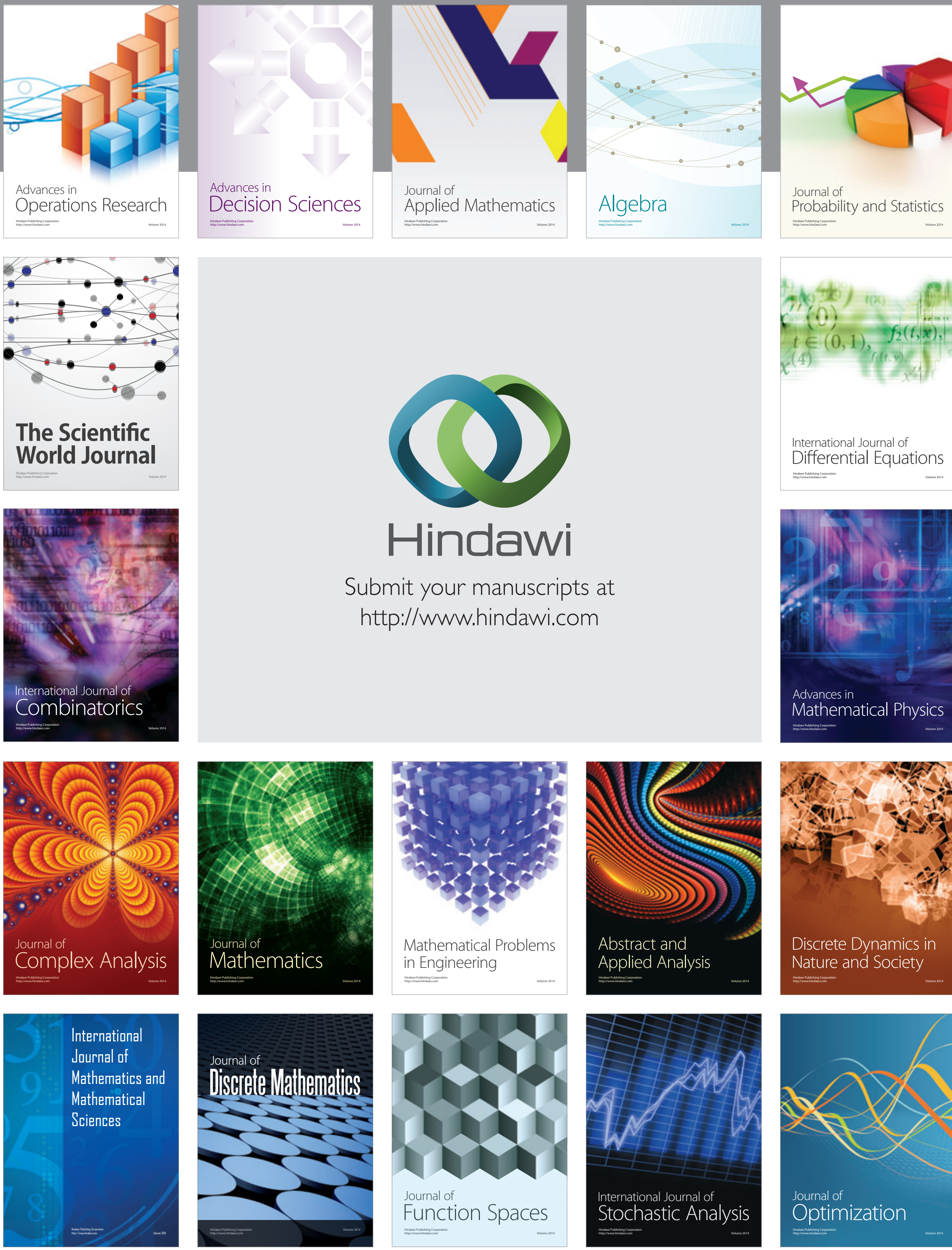
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