ERRATA FOR
PERRON–FROBENIUS THEOREM FOR NONNEGATIVE TENSORS
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On line 16 from the bottom on page 518 of Comm. Math. Sci. Vol. 6, No. 2 (2008), we conclude that $\tilde{C}_k$ satisfies (1) and (2) in the definition of Condition (E). This is a mistake; $\tilde{C}_k$ does not satisfy (2). Accordingly, the last sentence of Theorem 5.9 and the Z-eigenvalue part in Corollary 5.10 do not hold.

In fact, to an irreducible nonnegative tensor $A$ we can only conclude that there exists a positive Z-eigenvalue with a Z-eigenvector $x_0 \in \text{int} P$. Unlike the H-eigenvalue problem, there is no uniqueness for the positive Z-eigenvalue with positive eigenvector. The following is an example.

We define a 4-order 2-dimensional nonnegative irreducible tensor $A =(a_{i_1i_2i_3i_4})$, where

$$a_{i_1i_2i_3i_4} = \begin{cases} 
\frac{4}{\sqrt{3}}, & \text{if } (i_1i_2i_3i_4) = (1111), (2222), \\
1, & \text{if } (i_1i_2i_3i_4) = (1222), (2111), \\
0, & \text{elsewhere}.
\end{cases}$$

Then $(u, \lambda)$, where $u = (x, y)$, is a Z-eigenvector/eigenvalue of $A$ if it satisfies the system

$$\begin{align*}
\frac{4}{\sqrt{3}}x^3 + y^3 &= \lambda x(x^2 + y^2), \\
x^3 + \frac{4}{\sqrt{3}}y^3 &= \lambda y(x^2 + y^2).
\end{align*}$$

We have the following solutions on the unit circle: $(x_1, y_1) = (\frac{\sqrt{3}}{2}, \frac{1}{2})$, $\lambda_1 = \frac{13}{4\sqrt{3}}$, $(x_2, y_2) = (\frac{1}{2}, \frac{\sqrt{3}}{2})$, $\lambda_2 = \frac{13}{4\sqrt{3}}$, $(x_3, y_3) = (\frac{1}{\sqrt{2}}, \frac{1}{\sqrt{2}})$, $\lambda_3 = \frac{4 + \sqrt{3}}{2\sqrt{3}}$, $(x_4, y_4) = (\frac{1}{\sqrt{2}}, -\frac{1}{\sqrt{2}})$, $\lambda_4 = \frac{4 - \sqrt{3}}{2\sqrt{3}}$.

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