

The paper concerns interesting properties of classical means. Its present results obtained by using well-known methods. The proof of the main theorem is rather technical, but the result is interesting and correct. Therefore the result is possible to publish in the journal. But, the paper should be corrected.

My remarks:

1. The bibliography is very poor. We can find a lot of papers related to the topics investigated by the authors (e.g. listed below). The obtained result generalizes results obtained in some of these papers. The authors should include suitable chosen articles to the references.
2. Also, the introduction is poor. It should include a motivation of the investigation, in particular, its connections with the other results in the field (see for example introductions in the papers below).
3. The formulation of Theorem 2.1 is unclear and incorrect. The essence of Theorem 2.1 should be the following

- Let $\alpha \in [0, 1]$. Then

$$H_p(a, b) < \alpha P(a, b) + (1 - \alpha)L(a, b), \quad a, b > 0, a \neq b, \quad (1)$$

if and only if $p < p(\alpha) := \frac{\pi}{\alpha} - 2$.

- If

$$\alpha P(a, b) + (1 - \alpha)L(a, b) < H_p(a, b), \quad a, b > 0, a \neq b, \quad (2)$$

then $q < 4 - 3\alpha$. Moreover, if $q < \frac{4}{1+3\alpha}$, then (2) holds.

4. The list of additional remarks and mistakes:

- the optimal problem and the optimal functions should be defined in Introduction
- the optimal inequalities (1) and (2) are not clearly written
- the lower limit should be inserted in (5)
- $\frac{1}{b}$ should be inserted in (7) after the last inequality
- what does it mean the numerator of $h^0(t)$ in (12)?
- "(4 + 3α)" should be replaced by "(1 + 3α)" on page 3, line 20
- "I propose to replace the functions "ss, pp, rr, etc. " by s, p, r , etc."

5. The manuscript should be checked for English by a language editor.

Taking the above into consideration I cannot recommend the publication of the manuscript in the present form. But, in my opinion it is possible to accept the paper after having made the major revision. Then, further review is required after correction of the manuscript.

The Reviewer, January 2012

References

- [1] Chu, Yu-Ming; Hou, Shou-Wei; Shen, Zhong-Hua Sharp bounds for Seiffert mean in terms of root mean square. J. Inequal. Appl. 2012, 2012:11, 6 pp.
- [2] Chu, Yu-Ming; Qiu, Ye-Fang; Wang, Miao-Kun; Wang, Gen-Di The optimal convex combination bounds of arithmetic and harmonic means for the Seiffert's mean. J. Inequal. Appl. 2010, Art. ID 436457, 7 pp.

- [3] Chu, Yu-Ming; Wang, Miao-Kun; Gong, Wei-Ming Two sharp double inequalities for Seiffert mean. *J. Inequal. Appl.* 2011, 2011:44, 7 pp.
- [4] Chu, Yu-Ming; Wang, Miao-Kun; Qiu, Ye-Fang An optimal double inequality between power-type Heron and Seiffert means. *J. Inequal. Appl.* 2010, Art. ID 146945, 11 pp.
- [5] Chu, Yuming; Wang, Miaokun; Wang, Gendi The optimal generalized logarithmic mean bounds for Seiffert's mean. *Acta Math. Sci. Ser. B Engl. Ed.* 32 (2012), no. 4, 1619–1626.
- [6] Chu, Yu-Ming; Wang, Miao-Kun; Wang, Zi-Kui Best possible inequalities among harmonic, geometric, logarithmic and Seiffert means. *Math. Inequal. Appl.* 15 (2012), no. 2, 415–422.
- [7] Fu Li-Li, Xi Bo-Yan, Srivastava H. M., Schur-convexity of the generalized Heronian means involving two positive numbers, *Taiwanese Journal of Mathematics* 15(2011), 2721-2731.
- [8] Gao, Shaoqin Inequalities for the Seiffert's means in terms of the identric mean. *J. Math. Sci. Adv. Appl.* 10 (2011), no. 1-2, 23–31.
- [9] Hastö, Peter A. Optimal inequalities between Seiffert's mean and power means. *Math. Inequal. Appl.* 7 (2004), no. 1, 47–53.
- [10] Hou, Shouwei; Chu, Yuming Optimal convex combination bounds of root-square and harmonic root-square means for Seiffert mean. *Int. J. Math. Anal. (Ruse)* 5 (2011), no. 37-40, 1897–1904.
- [11] Hu, Huanan; Hou, Shouwei; Xu, Yanwu; Chu, Yuming Optimal convex combination bounds of root-square and harmonic root-square means for Seiffert mean. *Int. Math. Forum* 6 (2011), no. 57-60, 2823–2831.
- [12] Liu, Hong; Meng, Xiang-Ju The optimal convex combination bounds for Seiffert's mean. *J. Inequal. Appl.* 2011, Art. ID 686834, 9 pp.
- [13] Qiu, Yefang; Wang, Miaokun; Chu, Yuming The sharp combination bounds of arithmetic and logarithmic means for Seiffert's mean. *Int. J. Pure Appl. Math.* 72 (2011), no. 1, 11–18.
- [14] Wang, Miao-Kun; Qiu, Ye-Fang; Chu, Yu-Ming Sharp bounds for Seiffert means in terms of Lehmer means. *J. Math. Inequal.* 4 (2010), no. 4, 581–586.
- [15] Wang, Shanshan; Chu, Yuming The best bounds of the combination of arithmetic and harmonic means for the Seiffert's mean. *Int. J. Math. Anal. (Ruse)* 4 (2010), no. 21-24, 1079–1084.
- [16] Zong, Cheng; Chu, Yuming An inequality among identric, geometric and Seiffert's means. *Int. Math. Forum* 5 (2010), no. 25-28, 1297–1302. 26E60