

## A NEW PROOF OF SHAPIRO INEQUALITY

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*Abstract.* We present a new proof of Shapiro cyclic inequality. Especially, we treat the case  $n = 23$  precisely.

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### REFERENCES

- [1] P. J. BUSHELL, *Shapiro's cyclic sum*, Bull. London Math. Soc., **26**, (1994), 564–574
- [2] P. J. BUSHELL & J. B. MCLEOD, *Shapiro's Cyclic Inequality For Even  $n$* , J. of Inequal. Appl. **7** (2002), 331–348.
- [3] P. H. DIAMADA, *On a Cyclic Sum*, Proc. Glasgow Math. Assoc., **6**, (1961), 11–13.
- [4] J. L. SEARCY, B. A. TROESCH, *A Cyclic Inequality and a Related Eigenvalue Problem*,
- [5] B. A. TROESCH, *On Shapiro's Cyclic Inequalities for  $N = 13$* , Math. Comp., **45** No. 171 (1985), 199–207.
- [6] B. A. TROESCH, *The Validity of Shapiro's Cyclic Inequality*, Math. Comp., **53** No. 188 (1989), 657–664.