

COUPON COLLECTOR'S PROBLEM WITH UNLIKE PROBABILITIES

TOSHIO NAKATA

Abstract. In this note we study the coupon collector's problem with unlike probabilities using majorization and a Schur concave function.

Mathematics subject classification (2010): 60C05.

Keywords and phrases: Coupon collector's problem, majorization, Schur concave function.

REFERENCES

- [1] W. FELLER, *An Introduction to Probability Theory and Its Applications*, vol. I, 3rd ed., Wiley, New York, 1968.
- [2] P. FLAJOLET, D. GARDY AND L. THIMONIER, *Birthday paradox, coupon collectors, caching algorithms and self-organizing search*, *Discr. Appl. Math.* **39**, (1992), 207–229.
- [3] P. FLAJOLET AND R. SEDGEWICK, *Analytic Combinatorics*, Cambridge University Press, 2008.
- [4] K. JOAG-DEV AND F. PROSCHAN, *Birthday Problem with Unlike Probabilities*, *Amer. Math. Monthly*, **99**, (1992), 10–12.
- [5] T. LINDVALL, *Lectures on the coupling method*, Dover Publications, Inc., Mineola, NY, 2002.
- [6] A. MARSHALL AND I. OLKIN, *Inequalities: Theory of majorization and its applications*, Academic Press, New York-London, 1979.
- [7] H. VON SCHELLING *Coupon collecting for unequal probabilities*, *Amer. Math. Monthly*, **61**, (1954), 306–311.
- [8] J. STEELE, *The Cauchy-Schwarz Master Class: An Introduction to the Art of Mathematical Inequalities*, Cambridge UP, 2004.