

DISCRETE BERNSTEIN INEQUALITIES FOR POLYNOMIALS

RICHARD FOURNIER

Abstract. We study discrete versions of some classical inequalities of Bernstein for algebraic and trigonometric polynomials.

Mathematics subject classification (2010): 30C10, 41A17.

Keywords and phrases: Complex polynomials, Bernstein inequalities, discrete inequalities.

REFERENCES

- [1] N. G. DE BRUIJN, *Inequalities concerning polynomials in the complex domain*, Indagationes Mathematicae **9** (1947), 591–598.
- [2] D. DRYANOV, *A refinement of an inequality of R. J. Duffin and A. C. Schaeffer*, in Advances in constructive approximation: Vanderbilt 2003, Nashboro Press, Brentwood, 2004, 165–176.
- [3] D. DRYANOV, R. FOURNIER, AND ST. RUSCHEWEYH, *Some extensions of the Markov inequality for polynomials*, Rocky Mountain J. Math. **37** (2007), 1155–1165.
- [4] D. DRYANOV AND R. FOURNIER, *On a discrete variant of Bernstein's polynomial inequality*, Analysis (Munich) **25** (2005), 73–77.
- [5] R. J. DUFFIN AND A. C. SCHAEFFER, *A refinement of an inequality of the brothers Markov*, Trans. Amer. Math. Soc. **50** (1941), 517–528.
- [6] R. FOURNIER, *Case of equality for a class of bound-preserving operators of P_n* , Comput. Methods Funct. Theory **4** (2004), 183–188.
- [7] R. FOURNIER, ST. RUSCHEWEYH, AND L. SALINAS, *On a discrete norm for polynomials*, to appear in Journal of Mathematical Analysis and Applications, (2012).
- [8] C. FRAPPIER, Q. I. RAHMAN, AND ST. RUSCHEWEYH, *New inequalities for polynomials*, Trans. Amer. Math. Soc. **288** (1985), 69–99.
- [9] D. J. HALLENBECK AND T. H. MACGREGOR, *Linear Problems and Convexity Techniques in Geometric Function Theory*, Pitman, Boston, 1984.
- [10] Q. I. RAHMAN AND G. SCHMEISSER, *Analytic Theory of Polynomials*, Oxford University Press, Oxford, 2002.
- [11] M. RIESZ, *Eine trigonometrische Interpolationsformel und einige Ungleichungen für Polynome*, Jahresber. Deutsch. Math. Ver. **23** (1914), 354–368.
- [12] ST. RUSCHEWEYH, *Convolution in Geometric Function Theory*, Les Presses de l'Université de Montréal, Montréal, 1982.
- [13] J. SZABADOS AND P. VÉRTESI, *Interpolation of Functions*, World Scientific Publishing, Teaneck, 1980.