

## RELATIVE SCHUR-CONVEXITY ON GLOBAL NPC SPACES

CONSTANTIN P. NICULESCU AND IONEL ROVENȚA

*Abstract.* We introduce the concept of relative convexity on spaces with global nonpositive curvature and illustrate its usefulness by a number of inequalities involving the convex functions on such spaces.

*Mathematics subject classification (2010):* Primary 52A40; Secondary 26B25, 26D15.

*Keywords and phrases:* Global NPC space, convex function, stochastic matrix.

### REFERENCES

- [1] W. BALLMANN, *Lectures on spaces with nonpositive curvature*, DMV Seminar Band 25, Birkhäuser, Basel, 2005.
- [2] R. BHATIA, *Positive definite matrices*, Princeton University Press, 2007.
- [3] J. BORCEA, *Equilibrium points of logarithmic potentials induced by positive charge distributions. I. Generalized de Bruijn-Springer relations*, Trans. Amer. Math. Soc. **359** (2007), 3209–3237.
- [4] M. R. BRIDSON AND A. HAEFLIGER, *Metric spaces of non-positive curvature*, Grundlehren der Mathematischen Wissenschaften vol. 319, Springer-Verlag, 1999.
- [5] J. EELLS AND B. FUGLEDE, *Harmonic maps between Riemannian polyhedra*, Cambridge University Press, 2001.
- [6] G. H. HARDY, J. E. LITTLEWOOD AND G. PÓLYA, *Inequalities*, Cambridge Mathematical Library, 2nd Edition, 1952, Reprinted 1988.
- [7] J. JOST, *Equilibrium maps between metric spaces*, Calc. Var. **2** (1994), 173–204.
- [8] J. JOST, *Nonpositive curvature: geometric and analytic aspects*, Lectures in Mathematics ETH Zürich, Birkhäuser Verlag, Basel, 1997.
- [9] Y. LIM, *Convex geometric means*, J. Math. Anal. Appl. **404** (2013), No. 1, 115–128.
- [10] A. W. MARSHAL, I. OLKIN AND B. C. ARNOLD, *Inequalities: Theory of Majorization and Its Applications*, 2nd Edition, Springer-Verlag, 2011.
- [11] C. P. NICULESCU AND L.-E. PERSSON, *Convex Functions and their Applications. A Contemporary Approach*, CMS Books in Mathematics vol. 23, Springer-Verlag, New York, 2006.
- [12] C. P. NICULESCU AND I. ROVENȚA, *An Approach of Majorization in Spaces with a Curved Geometry*, J. Math. Anal. Appl. **411** (2014), No. 1, 119–128.
- [13] C. P. NICULESCU AND I. ROVENȚA, *Relative convexity and its applications*, Aequationes Mathematicae, 2015, DOI: 10.1007/s00010-014-0319-x.
- [14] J. PEČARIĆ, F. PROSCHAN, Y. L. TONG, *Convex functions, partial orderings, and statistical applications*, Academic Press, 1992.
- [15] K. T. STURM, *Probability measures on metric spaces of nonpositive curvature*, In vol.: *Heat kernels and analysis on manifolds, graphs, and metric spaces* (Pascal Auscher et al. editors), *Lecture notes from a quarter program on heat kernels, random walks, and analysis on manifolds and graphs*, April 16–July 13, 2002, Paris, France. Contemp. Math. **338** (2003), 357–390.