Optimization of Positive Generalized Polynomials under $\boldsymbol{l^p}$ Constraints

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Abstract: The problem of maximizing a non-negative generalized polynomial of degree at most p on the l_p-sphere is shown to be equivalent to a concave one. Arguments where the *maximum* is attained are characterized in connection with the irreducible decomposition of the polynomial, and an application to the labelling problem is presented where these results are used to select the initial guess of a continuation method.

Keywords: constrained optimization, convex optimization, combinatorial optimization, subhomogeneous functions, labeling

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