# The game-theoretic p-laplacian: the importance of being a ball

**by Rolando Magnanini (Università di Firenze)**

**Abstract.** The game-theoretic or normalized p-laplacian finds applications in the study of tug-of-war games and the evolution of a surface by mean curvature and seems to get along well with balls. I will show two instances that justify this claim. The former is a natural version of the asymptotic mean value property on balls for p-harmonic and p-caloric functions, introduced by Manfredi, Parviainen and Rossi, and its relation to p-harmonious functions, introduced by La Gruyer. The latter, that benefits from the fact that the game-theoretic p-laplacian becomes linear on one-dimensional and radial functions, concerns the construction of spherically symmetric barriers which are useful to control the short-time behavior of the solutions of certain initial-boundary value problems for the related evolutionary p-laplacian. This researches have been carried out in collaboration with M. Ishiwata (Osaka University) and H. Wadade (Kanazawa University), and D. Berti (Università di Firenze).