ICM 1998, Berlin, Aug. 18–27

Abstracts of Short Communications and Posters

Section:

8. Analysis

1991 MS Classification: 46, 49
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On extremality of set systems

Let X be a Banach space and let Ω_1, Ω_2 be nonempty closed sets in X. Let us introduce for them a constant $\theta(\Omega_1, \Omega_2) = \sup\{r > 0 :\ B_r \subset \Omega_1 - \Omega_2\}$, describing the measure of their "overlapping". Let us say that the sets Ω_1, Ω_2 form an *extremal system in a neighborhood* of a point $x \in \Omega_1 \cap \Omega_2$ if

$$\liminf_{\substack{\omega_1 \in \Omega_1,\ \omega_2 \in \Omega_2 \\ \omega_1 \to x,\ \omega_2 \to x, \\ \rho \to +0}} \frac{\theta([\Omega_1 - \omega_1] \cap B_\rho,\ [\Omega_2 - \omega_2] \cap B_\rho)}{\rho} = 0.$$

The necessary and sufficient extremality conditions (in the setting of Asplund spaces) - the *generalized Euler equation* - are formulated in terms of Fréchet normal cones. They can be viewed as a certain generalization of the classical separation theorem for convex sets.