Local approach to Kadec-Klee properties in symmetric function spaces

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Several results concerning local approach to Kadec-Klee properties with respect to global (local) convergence in measure in symmetric Banach function spaces will be presented. The essential question in the local geometry is whether a point x has some local property P if and only its nonincreasing rearrangement x^* has the same property P. We study the structure of H_g and H_l-points from that point of view. Among others, we show the relationships between H_g, H_l points and points of upper monotonicity, generalizing the global characterization from [1]. Moreover, we notice that, for an H_g point, the norm is lower simicontinuous with respect to the global convergence in measure, similarly as, for the point of order continuity, the norm is lower simicontinuous with respect to the convergence a.e. A full characterization of H_g and H_l points in the Lorentz spaces $\Gamma_{p,w}$ and $\Lambda_{p,w}$ will be given.

(All these results obtained jointly with Maciej Ciesielski and Paweł Kolwicz)

References

[1] V. I. Chilin, P. G. Dodds, A. A. Sedaev, and F. A. Sukochev, *Characterizations of Kadec-Klee properties in symmetric spaces of measurable functions*, Trans. Amer. Math. Soc. 348 (12) (1996) 4895-4918.