Seminarvortrag

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Rich families occuring across Maths or at least across Analysis, Topology, Set Theory ...

Abstract. Let P be a set and let $\prec$ be a *partial order* on it. Assume moreover that P is *(up)-directed by* $\prec$, i.e., for every $t_1, t_2 \in P$ there is $t_3 \in P$ such that $t_1 \prec t_3$ and $t_2 \prec t_3$. A subset $R \subset P$ is called *rich* if it is (i) *cofinal* (i.e. for every $t \in P$ there is $r \in R$ such that $t \prec r$) and (ii) σ*-complete* (i.e. whenever $r_1 \prec r_2 \prec \cdots$ is an increasing sequence in R, then $\sup_{i \in N} r_i$ belongs again to R). Fact. The intersection of countably many rich families is again rich.

Important example: Let X be a (rather non-separable) Banach space. Let $\mathcal{S}(X)$ denote the family of all separable closed subspaces of X and endow it by the partial order '$\subset$'.

Theorem. Given *any* function $f : X \to \mathbb{R}$, there is a rich family $\mathcal{R}$ in the poset $\big(\mathcal{S}(X), \subset\big)$ such that for every $Y \in \mathcal{R}$ and every $x \in Y$ the function f is continuous and Fréchet differentiable and ... at x if (and only if) so is the restriction $f|_Y$ at x.

Zeit: Donnerstag, den 22. Oktober 2015 um 15:15 Uhr

Ort: Bauingenieurgebäude, Technikerstraße 13, HSB 7

Gäste sind herzlich willkommen!

Eva Kopecká