Combinatorics of spoke systems for Fréchet–Urysohn points

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A *spoke* for a point x in a space X is a subspace S containing $N_x = \bigcap \mathcal{N}_x = \{y \in X : x \in \overline{\{y\}}\}$ such that x has a well-ordered (by $\supseteq$) neighbourhood base with respect to S. A *spoke system* is a collection of spokes $\mathfrak{S}$ such that

$$\left\{ \bigcup_{S\in\mathfrak{S}} U_S : (U_S)_{S\in\mathfrak{S}} \text{ is a selection from } (\mathcal{N}_x^S)_{S\in\mathfrak{S}} \right\}$$

is a neighbourhood base of x with respect to X.

I introduced the structure of spoke systems in [1] and showed that their existence characterised radial points, a transfinite generalisation of the Fréchet–Urysohn property.

In this talk, I will demonstrate how certain strengthenings of the Fréchet–Urysohn property (such as the α_i-properties from [2]) correspond to productive and combinatorial properties of *almost-independent* spoke systems.

[1] R. Leek, *An internal characterization of radiality*, Topology and its Applications **177** (2014), 10–22

[2] A. V. Arhangel'skiĭ, *The frequency spectrum of a topological space and the product operation*, Transactions of the Moscow Mathematical Society **1981** (1981), no. 2, 163–200