SMALL ULTRAFILTER NUMBER AND SOME COMPACTNESS PRINCIPLES

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The ultrafilter number $\mathfrak{u}(\kappa)$ is one of the *generalized cardinal invariants* which study the combinatorial properties of the spaces κ^κ or 2^κ for topological, purely combinatorial, or forcing-related reasons. Since the tree property and the failure of approachability at κ^{++} both imply $2^\kappa > \kappa^+$, they make the structure of the generalized cardinal invariants at κ possibly non-trivial. It is natural to ask to what extent the invariants can be manipulated while ensuring some form of compactness, such as the tree property or stationary reflection, at κ^{++}.

In the talk, we will focus on small $\mathfrak{u}(\kappa)$ for κ which is a strong limit singular cardinal. The possibility of having κ singular is even more interesting from the point of compactness at κ^{++}: it combines three intriguing properties – the necessary failure of SCH at κ, compactness at κ^{++} and non-trivial cardinal invariants at κ.

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