Compactness principles for uncountable trees

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We will discuss some results related to compactness principles at small infinite cardinals which extend the usual compactness of first-order logic. We will primarily focus on compactness principles related to trees, in particular as regards generalizations of König's lemma (that narrow trees of height ω have always a cofinal branch).

In the first part of the talk, we define basic concepts to make the lecture accessible also for non-specialists in set theory. We review the most common compactness principles and their basic properties. In the second part of the talk, we survey recent results in this area and state some open questions.