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Model Theory of the Field of p -adic Numbers

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This series of lectures is devoted to the elementary theory of the p -adics numbers. The starting point will be Denef's cell decomposition theorem. From it we deduce the quantifier elimination in Macintyre's language, but also a dimension theory for definable sets and other related results. We then focus on the uniform theory when p varies; in particular, on the uniform cell decomposition in the Denef-Pas three sorted language and the Ax-Kochen-Ersov transfer principle.