Title: $p$-adic numbers

Basic details: This is a 10 hours lecture course for PhD students in (pure) mathematics. It will be taught on Mondays, 18 January to 15 February 2010, 10.30–12.30, in De Morgan House (Russell Square).

Course description: The aim of this course is to explain the construction and basic properties of $p$-adic numbers and to give an introduction to some elementary aspects of $p$-adic analysis.

Syllabus: Absolute values, completions, the fields $\mathbb{Q}_p$ and $\mathbb{C}_p$, continuous functions, Mahler’s expansion, differentiable functions, power series, $p$-adic versions of some classical functions ($\exp_p, \log_p, \Gamma_p, \ldots$)

Prerequisites: Undergraduate algebra and analysis, including some basic knowledge of metric and topological spaces

Literature:

Lecturer: Dr Manuel Breuning (King’s College London)