On Some Classes of Non-Archimedean Operator Algebras

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We study some classes of algebras of operators on non-Archimedean Banach spaces. In particular, we propose a possible way (based on the notion of a Baer ring) to develop a counterpart of the notion of a von Neumann algebra. Short of any general theory of that kind, we consider in detail a non-Archimedean version of the crossed product construction, one of the main methods of constructing von Neumann algebras in the classical case.