

Department of Mathematics

Schedule of Events—February 18, 2002–February 25, 2002

Friday, February 22, 4:00 pm

Colloquium

Speaker: E.I. Gordon

Old Main 214/2231

**Title: On Approximation of Topological
Algebraic Systems by finite Ones**

We introduce a definition of approximation of a topological algebraic system A by systems of a class \mathcal{K} and investigate it for the case when the class \mathcal{K} consists of finite systems. For the case when the topology on the system A is discrete this definition is equivalent to the well-known definition of local embedding of A in \mathcal{K} , which means that A is a subsystem of an ultraproduct of some systems in the class \mathcal{K} . We obtain a similar characterization of approximation of a locally compact system A by systems in \mathcal{K} . We consider the bounded formulas in the signature of A and their approximations similar to those, introduced for Banach spaces in the paper of C.W.Henson “Nonstandard hulls of Banach spaces” *Israel Journal of Mathematics* (1976), v.25, pp. 108 - 144. We prove that a positive bounded formula φ holds in A iff all precise enough approximations of φ hold in all precise enough approximations of A . We prove that it is impossible to approximate a locally compact field by finite associative rings (not necessary commutative). Finite approximations of the field \mathbf{R} can be interpreted as computer systems for reals. So it is impossible to construct a computer arithmetic for reals that is an associative ring.

This is a joint work with C.W.Henson and L.Yu. Glebskii.

Saturday, February 23, All Day

ICTM Math Contest

University Union

Monday, February 25, 1:00 pm

MEG Meeting

Old Main M316/3413

Monday, February 25, 4:00

Math Departmental Meeting

Old Main 214/2231
