1035-17-1208 **David M Riley*** (dmriley@uwo.ca), Department of Mathematics, The University of Western Ontario, London, Ontario N6A 5B7, Canada. *Pro-finite p-adic Lie algebras.*

Let p be a prime number. A finite nilpotent Lie ring of characteristic a power of p is called finite-p. A pro-p Lie ring is an inverse limit of finite-p Lie rings. Pro-p Lie rings play a role in Lie theory similar to that played by pro-p groups in group theory. Every pro-p Lie ring admits the structure of a Lie algebra over the p-adic integers; furthermore, every p-adic Lie algebra that has finite rank as a p-adic module has an open pro-p subalgebra.

I will present some of my joint work with Leland McInnes on pro-p Lie rings. In particular, we proved the equivalence of the following conditions for a finitely generated pro-p Lie ring L: L has finite Prüfer rank; L is isomorphic to a closed subring of $\mathfrak{gl}(V)$ for some p-adic module V of finite rank; and, for sufficiently large n, the Lie $\mathbb{F}_p$-subalgbra $W_n = \langle e_{12}, te_{22} \rangle \subseteq \mathfrak{gl}_2(\mathbb{F}_p[t]/\langle t^n \rangle)$ is not an open section of L. Our primary result is a positive solution to the Kurosh problem for pro-finite Lie rings; namely, all Engelian pro-finite Lie rings are locally nilpotent. (Received September 19, 2007)