1042-03-56 **James H. Schmerl*** (schmerl@math.uconn.edu), Department of Mathematics, University of Connecticut, Storrs, CT 06269-3009. *ω-models of Finite Set Theory.*

(This is joint work with Ali Enayat and Alber Visser.) Let $\mathsf{ZF}_{\mathsf{fin}}$ be the theory obtained from the usual formulation of ZF by replacing the Axiom of Infinity with its negation. Within each model $\mathfrak{M} \models \mathsf{ZF}_{\mathsf{fin}}$ there is a naturally defined model $\mathbb{N}^{\mathfrak{M}}$ of Peano Arithmetic. If $\mathbb{N}^{\mathfrak{M}}$ is the standard model, then we say that $\mathfrak{M}$ is an *ω-model*. A method for constructing ω-models of $\mathsf{ZF}_{\mathsf{fin}}$ will be presented, leading to results such as: (1) For each group G there is an ω-model whose automorphism group is isomorphic to G. (2) For each infinite cardinal κ, there are 2^κ nonisomorphic rigid ω-models of cardinality κ. (3) There are infinitely many nonisomorphic, highly recursive, pointwise-definable ω-models. In regard to (3), $\mathfrak{M} = (M, E)$ is *highly recursive* if M and E are recursive and so is the function $x \mapsto |\{y \in M : \langle y, x\rangle \in E\}|$. In contrast to (3) there is: (4) Every recursive model of $\mathsf{ZF}_{\mathsf{fin}}$ is an ω-model. (Received August 05, 2008)