1043-14-18 **Tatiana M Bandman*** (bandman@macs.biu.ac.il), Math. Department, Bar Ilan University, 52900 Ramat-Gan, Israel. *Arithmetic Dynamics and the Characterization of Finite Solvable Groups.*

A subject of the communication is a joint work of T. Bandman, F. Grunewald, B. Kunyavskii.

There are two theorems, characterizing solvable groups in the class of finite groups by identities in two variables .

Theorems. Define two sequences u_n and s_n in the following way:

$$u_1(x,y) := x^{-2}y^{-1}x, \quad s_1(x,y) := x,$$

and, inductively,

$$u_{n+1}(x,y) := [\, x\, u_n(x,y)\, x^{-1},\, y\, u_n(x,y)\, y^{-1}\,], \quad s_{n+1}(x,y) := [\, y^{-1}\, s_n(x,y)\, y,\, s_n(x,y)^{-1}\,].$$

A finite group G is solvable iff

–for any $(x,y) \in G \times G \quad \exists n : u_n(x,y) = 1$;

–for any $(x,y) \in G \times G \quad \exists n : s_n(x,y) = 1$.

It appears that the proves of that Theorems are closely connected to a problem in Arithmetic Dynamics on Affine Varieties. For both sequences the proof may be reduced to finding a periodic set of an endomorphism of an affine variety, connected to a group $PSL(2,\mathbb{F}_p)$ or $Sz(2^n)$.

Using Arithmetic Dynamics methods we provide some necessary and sufficient conditions on a sequence to be appropriate for characterizing solvable groups. (Received July 01, 2008)