

1086-VJ-2715 **Xiaohui Shi*** (xiaohuishi@my.unt.edu), Denton, TX 76203. *The Graev Metrics Over Free Groups.*

In this talk I will present for every non-trivial element in free groups, the Graev distances between its positive integer n th power and the identity element is at least n . In particular, this result indicates for every non-trivial element of the free group with two generators, the set of Graev metrics between its n th power and the identity element for all positive integer n is unbounded. This answers a question of Van Den Dries and Gao. Furthermore, this result proves that the new Polish group introduced by Van Den Dries and Gao based on the free group with two generators with the Graev metric has no small groups. (Received September 25, 2012)