1099-42-310   **Timur Akhunov*** (`takhunov@z.rochester.edu`), 820 Hylan Bldg, University of Rochester, Rochester, NY 14607, and **Cristian Rios**. *Hypoellipticity for a new class of infinitely degenerate elliptic operators.* Preliminary report.

Elliptic differential equations are a natural generalization of the Laplace equation and are among the most studied differential equations. From an analytical perspective one of the key properties for these equations is the regularity of their solutions. A classical result from the PDE theory is that for uniformly elliptic operators of second order (which at every fixed point resemble a laplacian in a uniform way), solutions are 2 derivatives smoother than data in most Hölder and Sobolev spaces.

The weakest form of this property, called *hypoellipticity*, when a smooth data leads to smooth solutions. For second order operators, the amount of gain may be less than 2 and in very degenerate cases the local form of this property fails. In a landmark 1964 paper Lars Hörmander established a bracket criterion for degenerate elliptic operators that gain a positive number of derivatives. In this talk, I will discuss a new class of examples of degenerate elliptic operators that gain no derivatives. This work generalizes previous work of Fedii, Morimoto and J.J. Kohn. (Received February 10, 2014)