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Shu Kawaguchi* (kawaguch@math.sci.osaka-u.ac.jp), Department of Mathematics, Graduate School of Science, Osaka University, Toyonaka, Osaka 560-0043, Japan. *Local and global canonical height functions for affine space regular automorphisms.*

In this talk, I would first like to discuss local canonical height functions (i.e. Green functions) for affine space regular automorphisms defined over a non-archimedean valued field. Then I would like to consider regular automorphisms defined over a number field: If $f : \mathbb{A}^N \rightarrow \mathbb{A}^N$ is a regular automorphism defined over a number field K , then the sum of local canonical height functions over all places of K gives rise to a global canonical height function, with which we can derive several arithmetic properties of f . If possible, I would like to talk some finiteness results about commuting regular automorphisms. (Received September 19, 2009)