Title: Tameness of degree functions

Abstract: Let $A \subseteq B$ be integral domains and G be a totally ordered Abelian group. D. Daigle has formulated certain hypotheses on degree function $\deg : B \to G \cup \{-\infty\}$ so that it is tame in characteristic zero, i.e., $\deg(D)$ is defined for all A-derivations $D : B \to B$. This study is important because each $D \in \mathrm{Der}_k(B)$ for which $\deg(D)$ is defined, we can homogenize the derivation which is an important and useful tool in the study of $\mathbb{G}_a$-action on an algebraic variety.
In arbitrary characteristic, $\mathbb{G}_a$-action on an affine scheme $\mathrm{Spec}(B)$ can be interpreted in terms of exponential maps on B. In this talk we shall discuss analogous formulations of hypotheses on the degree function so that $\deg(\phi)$ is defined for each A-linear exponential map ϕ on B. This talk is based on a joint work with N. Gupta.