1038-16-164   **Mutsumi Saito*** (`saito@math.sci.hokudai.ac.jp`), Department of Mathematics, Faculty of Science, Hokkaido University, Sapporo, 060-0810, Japan. *Critical modules of rings of differential operators of affine semigroup algebras.*

Critical modules are the simplest modules among modules of the same Krull dimension. Those of Krull dimension 0 are exactly the simple modules. Knowing critical modules is thus very fundamental in the module theory.

In this talk, we consider the ring D of differential operators of an affine semigroup algebra. The ring D inherits the $\mathbb{Z}^d$-grading from the affine semigroup algebra. We characterize critical $\mathbb{Z}^d$-graded D-modules and classify all singly generated critical $\mathbb{Z}^d$-graded D-modules. This classification generalizes that of simple $\mathbb{Z}^d$-graded D-modules by Musson-Van den Bergh. (Received February 07, 2008)