

1165-13-186

**Michael DiPasquale\*** ([michael.dipasquale@colostate.edu](mailto:michael.dipasquale@colostate.edu)) and **Babak Jabbar Nezhad**,  
Ankara, Turkey. *Koszul multi-Rees algebras arising from principal Borel ideals.*

We show that a collection of principal Borel ideals (and somewhat more generally, principal  $L$ -Borel ideals) has a multi-Rees algebra which is Koszul. We accomplish this by exhibiting a quadratic Gröbner basis with respect to lexicographic order. In this talk we focus on conveying a few of the primary ingredients of the proof. The first of these is a technique for verifying a collection of binomials generates or forms a Gröbner basis for a toric ideal based on the graph-theoretic properties of ‘fiber graphs’ associated to the toric map. The second is a modification of Sturmfels’ sorting algorithm that produces least factorizations of products from principal Borel ideals with respect to lexicographic order. This algorithm extends (in a greedy fashion) to the multi-Rees algebra. This is joint work with Babak Jabbar Nezhad. (Received January 18, 2021)