

ALGORITHMIC ASPECTS OF TROPICAL GEOMETRY OVER FIELDS WITH VALUATION

YUE REN

ABSTRACT. In this talk, we will discuss an algorithmic approach for computing tropical varieties over fields with valuation based on the classical theory of standard bases. This approach can be regarded as a generalization of a known trick for the field of Puiseux series as it works by introducing a new variable to emulate the valuation on a monomial level.

In particular, we will highlight some algorithmic challenges that arise along the way and how overcoming them lead to better algorithms for computer algebra in general.

All algorithms have been implemented in the computer algebra system Singular and are publicly available as part of the official Singular distribution. At the end of the talk, I will show how they and many more algorithms can be accessed through the official Singular webinterface.