Berkovich spaces and birational geometry

J. Nicaise

I will discuss various applications of Berkovich spaces to singularity theory. Berkovich geometry is a branch of non-archimedean geometry, that is, analytic geometry over non-archimedean fields such as p-adic fields or fields of Laurent series. The points on a Berkovich space can be interpreted as real valuations, which gives rise to various natural connections with birational geometry. The applications we will discuss include:
* the analytic Milnor fiber, a non-archimedean model for the Milnor fibration of a complex hypersurface singularity;
* Thuillier's generalization of Stepanov's theorem on dual intersection complexes of embedded resolutions of singularities;
* the Kontsevich-Soibelman skeleton of a degeneration of complex varieties and connections with the Minimal Model Program.

We will start with a basic introduction to Berkovich geometry.