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Mirko Mauri: The essential skeletons of pairs and the geometric $P=W$ conjecture.

The geometric $P=W$ conjecture is a conjectural description of the asymptotic behavior of a celebrated correspondence in non-abelian Hodge theory. In particular, it is expected that the dual boundary complex of the compactification of character varieties is a sphere. In a joint work with Enrica Mazzon and Matthew Stevenson, we manage to compute the first non-trivial examples of dual complexes in the compact case. This requires to develop a new theory of essential skeletons over a trivially-valued field. As a byproduct, inspired by these constructions, we show that certain character varieties appear in degenerations of compact hyper-Kähler manifolds. In this talk we will explain how these new non-archimedean techniques can shed new light into classical algebraic geometry problems.