STEVE RAYAN, University of Saskatchewan
Asymptotics of hyperpolygons

As discovered in the work of Godinho-Mandini and Biswas-Florentino-Godinho-Mandini, the moduli space of n-sided hyperpolygons in the Lie algebra $\mathfrak{su}(2)^*$ is naturally a subvariety of the moduli space of rank-2 parabolic Higgs bundles on the projective line punctured n times, and the integrable system structure pulls back to one on hyperpolygon space. These results were extended to higher rank in recent work by J. Fisher and myself. In this talk, I will report on joint work with H. Weiss regarding the asymptotic geometry of hyperpolygon space and its ambient space of parabolic Higgs bundles. The former has a hyperkaehler metric arising from a finite-dimensional quotient and the latter has one arising from an infinite-dimensional quotient. We use properties of the hyperkaehler moment map for hyperpolygon space to construct a limiting sequence of hyperpolygons that terminates in a moduli space of degenerate hyperpolygons. In the spirit of the work of Mazzeo-Swoboda-Weiss-Witt on ordinary Higgs bundles, we use this partial compactification to show that hyperpolygon space is an ALE manifold, as expected for Nakajima quiver varieties. Finally, I will use this analysis to speculate on differences between the metric on hyperpolygon space and the one on the ambient parabolic Higgs moduli space.