Polygon and hyperpolygon spaces: a journey to moduli space of higgs bundles

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In this talk I will describe two classes of spaces, the polygon and hyperpolygon spaces, that arise respectively as Kähler and hyperkähler reduction. In particular I will illustrate how the geometrical structure of the polygon space $M(\alpha)$ and of the hyperpolygon space $X(\alpha)$ depends upon the data of n real positive numbers, which are the entries of the 'length vector' $\alpha \in \mathbb{R}^n_+$. Along the way we will prove that the hyperpolygon space $X(\alpha)$ is isomorphic to (certain) moduli spaces of parabolic Higgs bundles. This is joint work with Leonor Godinho.