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*Title:* Morse theory on the moduli space of Higgs bundles.

*Abstract:* One of the first fields where the holomorphic tool of Higgs bundles proved out to be very effective, has been in counting the connected components of the moduli space of fundamental group representations into a semisimple Lie group. The non-abelian Hodge correspondence relates this moduli space to a moduli space equipped with a symplectic structure. This structure allows us to consider an appropriate Morse-Bott function to be used for the component count. The technique was developed by N. Hitchin, based on previous ideas of Atiyah-Bott and Frankel.