THE CONFORMAL LIMIT AND PROJECTIVE STRUCTURES

PETER B. GOTHEN

Abstract. The non-abelian Hodge correspondence maps a polystable $SL(2,R)$-Higgs bundle on a compact Riemann surface X of genus $g > 1$ to a connection whose holonomy is, in some cases, that of a branched hyperbolic structure. On the other hand, Gaiotto's conformal limit maps the same bundle to a partial oper, *i.e.*, to a connection whose holonomy is that of a branched complex projective structure compatible with X. I shall explain how these are both instances of the same phenomenon: the family of connections appearing in the conformal limit can be understood as a family of complex projective structures, deforming the hyperbolic ones into the ones compatible with X. Moreover, when the Higgs bundle has zero Toledo invariant, this deformation is optimal, inducing a geodesic in the Teichmüller metric. Time permitting I shall touch on possible generalisations to the case of parabolic Higgs bundles.

Keywords: Higgs bundles, Hodge theory, hyperbolic Higgs bundles, moduli spaces, parabolic Higgs bundles, stability, Teichmüller spaces.

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CMUP, UPorto, Porto, Portugal
Email address: pbgothen@fc.up.pt