

# Queen's Algebraic Geometry — Seminar —

## A QUIVER APPROACH TO THE POINCARÉ SERIES OF TWISTED HIGGS BUNDLE MODULI SPACES ON $\mathbb{P}^1$

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### Abstract

We apply the Morse-theoretic approach of Hitchin and Gothen for computing Betti numbers of Higgs bundle moduli spaces on positive-genus curves to moduli spaces of twisted Higgs bundles on  $\mathbb{P}^1$ . Certain difficulties encountered when applying the method to ranks larger than 3 in the positive genus setting are surmountable in the very combinatorial twisted Higgs case at genus 0. Holomorphic chains arise naturally in this problem — we regard these as quivers, and develop a dictionary between holomorphic chains and certain classes of quivers. In particular, our calculations show that a twisted ADHM formula of Mozgovoy (after Chuang, Diaconescu, and Pan) gives exactly the Poincaré polynomials of twisted Higgs moduli spaces, at least for ranks 1 through 5. Our calculations combined with the ADHM data suggest some conjectures about Betti numbers for higher-rank moduli spaces.

Monday 27 February 2012  
15:30 – 16:30  
319 Jeffery Hall