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The deformed Vortex equations and equivariant stability conditions

We study the higher rank deformed Hermitian-Yang-Mills equations for SU(2)-equivariant holomorphic vector bundles over X times P1 for X a compact Riemann surface. For a class of vector bundles of vortex type, we establish the equivalence between existence of solutions to higher rank dHYM equations and an appropriate notion of algebro-geometric stability, called Z-stability. We show that Z-stability is implied by, and conjecturally equivalent to, Bridgeland stability.