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Cohomology of Hypertoric Hitchin Systems

Hypertoric Hitchin systems are combinatorial cousins of moduli spaces of Higgs bundles whose cohomological structure is governed by unions of toric varieties glued to each other along toric subvarieties. We study these 'broken' toric varieties, proving a Deligne-type decomposition theorem and reducing the calculation of the Betti numbers of hypertoric Hitchin systems to understanding a certain family of examples.