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p-adic integration, buildings and BPS invariants

I will report on joint work in progress with Dimitri Wyss and Paul Ziegler, continuing our previous papers on the Hausel-Thaddeus conjecture and Ngô's geometric stabilisation theorem. In those articles, we applied Batyrev's technique of p-adic integration to the Hitchin system. A common feature of our previous two papers is that we worked with moduli spaces, which have at most quotient singularities. We achieved this either by imposing a coprimality assumption on rank and degree, or by restricting to the elliptic locus. Our new work sheds light on the geometric meaning of p-adic integration in the absence of those assumptions. We will see that the resulting theory is closely related to BPS invariants.