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Renormalized volume on the Teichmüller space of punctured Riemann surfaces

We define and study the renormalized volume for geometrically finite hyperbolic 3-manifolds that may have rank-1 cusps. We prove a variation formula, and show that for certain families of convex co-compact hyperbolic metrics degenerating to a geometrically finite hyperbolic metric with rank-1 cusps, the renormalized volume converges to the renormalized volume of the limiting metric. This is a joint work with Colin Guillarmou and Sergiu Moroianu.