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On the renormalized volume of quasifuchsian manifolds

The renormalized volume of quasifuchsian hyperbolic 3-manifolds was originally introduced for physical reasons. Takhtajan and Zograf (and others) discovered that it provides a Kähler potential for the Weil–Petersson metric on Teichmüller space. We will give an elementary, differential-geometric account of this result. It can be extended to quasifuchsian manifolds having cone singularities along infinite lines, yielding results on the Teichmüller space of hyperbolic metrics with cone singularities (of prescribed angles) on a closed surface.

Joint works with K. Krasnov, C. Lecuire, S. Moroianu.