1129-11-404 **Daniel J. Garbin*** (dgarbin@qcc.cuny.edu), Queensborough Community College, Dept. of Mathematics and Computer Science, 222-05 56th Avenue, Bayside, NY 11364. *Spectral asymptotics on sequences of elliptically degenerating Riemann surfaces.* Preliminary report.

This is the second in a series of two articles where we study various aspects of the spectral theory associated to families of hyperbolic Riemann surfaces obtained through elliptic degeneration. In the first article, we investigate the asymptotics of the trace of the heat kernel both near zero and infinity and we show the convergence of small eigenvalues and corresponding eigenfunctions. Having obtained necessary bounds for the trace, this second article presents the behavior of several spectral invariants. Some of these invariants, such as the Selberg zeta function and the spectral counting functions associated to small eigenvalues below 1/4, converge to their respective counterparts on the limiting surface. Other spectral invariants, such as the spectral zeta function and the logarithm of the determinant of the Laplacian diverge. In these latter cases, we identify diverging terms and remove their contributions, thus regularizing convergence of these spectral invariants. Our study is motivated by a result which D. Hejhal attributes to A. Selberg, proving spectral accumulation for the family of Hecke triangle groups. In this article, we obtain a quantitative result to Selberg's remark. (Received March 20, 2017)