p-adic Arakelov theory on curves

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Abstract. We introduce the p-adic analogue of Arakelov intersection theory on curves. The intersection pairing in an extension of the p-adic height pairing for divisors of degree 0 in the form described by Coleman and Gross. It also uses Coleman integration and is related to work of Colmez on p-adic Green functions. We introduce the p-adic version of a metrized line bundle and define the metric on the determinant of its cohomology in the style of Faltings. It is possible to prove in this theory analogues of the Adjunction formula and the Riemann-Roch formula.