Volume Identities for hyperbolic manifolds with boundary

Given a finite volume hyperbolic n-manifold $M$ with totally geodesic boundary, we show there is a real valued function $F_n$ such that the volume of any finite volume hyperbolic n-manifold $M$ with totally geodesic boundary $M$ is the sum of values of $F_n$ on the orthogeodesic length spectrum. For $n = 2$ the function $F_2$ is the Rogers L-function and the summation identities give dilogarithm identities on the Moduli space of surfaces. This is joint work with Jeremy Kahn.