On the boundary slopes of hyperbolic 3-manifolds

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Abstract. Let M be a hyperbolic 3-manifold, and F be a boundary component of M of genus at least two. For a slope r on F, we denote by $M(r)$ the manifold obtained by attaching a 2-handle to M along R. Natural questions are the following: (1) How many slopes r on F are there so that $M(r)$ is not hyperbolic? (2) Suppose M contains no essential closed surface of genus g. How many slopes r on F are there so that $M(r)$ contains an essential closed surface of genus g? In this talk, we shall introduce some results on this topic.