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Lien-Yung Kao* (lkao@nd.edu), University of Notre Dame, Department of Mathematics, 255 Hurley Hall, Notre Dame, IN 46556. *Entropy, Hausdorff Dimension and Immersed Surfaces in Hyperbolic 3-Manifolds.*

We consider a π_1 -injective immersion $f : \Sigma \rightarrow M$ from a compact surface Σ to a hyperbolic 3-manifold M . Let Γ denote the copy of $\pi_1\Sigma$ in $\text{Isom}(\mathbb{H})^3$ induced by the immersion f , and we endow Σ with the induced metric. Using the Thermodynamic Formalism, when Σ is negatively curved and Γ is convex cocompact, we prove an inequality relating the topological entropy $h(\Sigma)$ of the geodesic flow on T^1M and the Hausdorff dimension of the limit set $\Lambda(\Gamma)$ of Γ : $C_1(\Sigma, M) \cdot \dim_H(\Lambda(\Gamma)) \leq h(\Sigma) \leq C_2(\Sigma, M) \cdot \dim_H(\Lambda(\Gamma))$, where $C_1(\Sigma, M)$ and $C_2(\Sigma, M)$ are two geometric constants. Herein, we investigate the geometry meaning of these two constants in detail. Furthermore, we study the rigidity phenomenon coming from this inequality. Lastly, we apply our results to immersed minimal surfaces in hyperbolic 3-manifolds, and these discussions lead us to a similar study as A. Sanders' work on the moduli space of Σ introduced by C. Taubes. (Received September 20, 2015)