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The half-space theorem for constant mean curvature surfaces in $\mathbb{H}^2 \times \mathbb{R}$

Abstract: The theory of constant mean curvature $H > 0$ surfaces (H-surfaces) in $\mathbb{H}^2 \times \mathbb{R}$ became very active after the seminal work by Abresch and Rosenberg where they described a Hopf-type holomorphic quadratic differential on any such surface and classified the rotational H-spheres. The critical value for the mean curvature in $\mathbb{H}^2 \times \mathbb{R}$ is $\frac{1}{2}$ in the sense that there exist compact H-surfaces only when $H > \frac{1}{2}$ and complete H-graphs if $H \leq \frac{1}{2}$. In this talk we will prove that a properly embedded H-surface in $\mathbb{H}^2 \times \mathbb{R}$ with $0 < H \leq \frac{1}{2}$ and an annular end cannot be contained in a horizontal slab and that the only examples with finite topology contained in $\mathbb{H}^2 \times [0, +\infty)$ are graphs. This is a joint work with Laurent Hauswirth and Ana Menezes.