CCSU
DEPARTMENT OF MATHEMATICAL SCIENCES

COLLOQUIUM

Friday, February 24
2:00 – 3:00 PM
Maria Sanford, Room 101

LEAST AREA SPHERICAL CATENOIDS IN HYPERBOLIC THREE SPACE

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Abstract

Let $y = f(x)$ be a smooth curve above the x-axis. If we rotate the curve along the x-axis, we get a surface of revolution S. If we suppose that the surface S is a minimal surface (In this case, S is called a (spherical) minimal catenoid.), i.e., the mean curvature of S is zero at every point, then we know that $y = f(x)$ is a catenary. The equation of a catenary has the form $y = a \cosh\left(\frac{x}{a}\right) = a\left(\frac{e^{x/a} + e^{-x/a}}{2}\right)$ here a is a positive constant. In three dimensional hyperbolic space $\mathcal{H}^3$, we also have the spherical minimal catenoids. In this talk, I will talk about the equations of the catenaries and the properties of the spherical minimal catenoids in $\mathcal{H}^3$. Besides, I will talk about how to determine whether a spherical minimal catenoids in $\mathcal{H}^3$ is a least area surface.