SEMILINEAR PDES ON HYPERBOLIC SPACE AND RELATED PROBLEMS

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ABSTRACT. In this talk, semilinear elliptic partial differential equations (PDEs) on hyperbolic space $\mathbb{H}^N$ and related problems will be presented. Several geometric problems lead to the study of the equation:

$$-\Delta_{\mathbb{H}^N} u - \lambda u = |u|^{p-2}u, \quad u \in H^1(\mathbb{H}^N),$$

where $\lambda$ is a real parameter and $H^1(\mathbb{H}^N)$ denotes the Sobolev space on $\mathbb{H}^N$. Some existence, non-existence and qualitative properties of solutions of above equation will be pointed out.