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Jungang Li* (jungang_li@brown.edu), **Guozhen Lu** and **Qiaohua Yang**. *Higher order Brezis-Nirenberg problems on hyperbolic spaces.*

The classical Brezis-Nirenberg problem treats second order semilinear equations whose nonlinearity is associated with the critical Sobolev exponent. In this talk, we will discuss a higher order version of the Brezis-Nirenberg problem on hyperbolic spaces. Such problem is closely related to a recent progress on higher order Hardy-Sobolev-Mazya inequalities on upper half spaces (due to G. Lu and Q. Yang). We establish both existence and nonexistence results of solutions and the Fourier analysis on hyperbolic spaces plays an important role in our study. Meanwhile we investigate the hyperbolic symmetry of positive solutions. This is a joint work with G. Lu and Q. Yang. (Received July 26, 2020)