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**Jungang LI\*** (jungang\_li@brown.edu), **Guozhen Lu** and **Qiaohua Yang**. *Higher order Brezis-Nirenberg problem on hyperbolic spaces.*

Brezis-Nirenberg problem considers semilinear elliptic equations whose nonlinearity is associated with the critical Sobolev exponent. In this talk we will discuss the recent progress of the higher order Brezis-Nirenberg problem on hyperbolic spaces. Our results include the existence and nonexistence of solutions, the symmetry of solutions and the solution gap phenomenon. Those results are deeply related to the sharp Hardy-Sobolev-Maz'ya inequalities with higher order derivatives. This is a joint work with Guozhen Lu (University of Connecticut) and Qiaohua Yang ( Wuhan University). (Received January 16, 2021)