
ALEXANDER KOLPAKOV, University of Neuchatel, Neuchatel, Switzerland

Kissing number in non-Euclidean spaces of constant sectional curvature

We obtain upper and lower bounds on the kissing number of congruent radius $r > 0$ spheres in hyperbolic \mathbb{H}^n and spherical \mathbb{S}^n spaces, for $n \geq 2$, and show that $\kappa_H(n, r) \sim (n-1) \cdot d_{n-1} \cdot B(\frac{n-1}{2}, \frac{1}{2}) \cdot e^{(n-1)r}$ for large n . Here d_n is the sphere packing density in \mathbb{R}^n , and B is the beta-function. We also produce numeric bounds by using semidefinite programs and spherical codes. A similar approach locates the values of $\kappa_S(n, r)$, for $n = 3, 4$, over subintervals in $[0, \pi]$ with relatively high accuracy. Joint work with Maria Dostert (KTH Stockholm, Sweden).