1147-94-163 **Yuri I. Manin** and **Matilde Marcolli*** (matilde@caltech.edu). *Asymptotic bounds for spherical codes.*

The set of all error-correcting codes C over a fixed finite alphabet F of cardinality q determines the set of code points in the unit square with coordinates (R(C), delta (C)):= (relative transmission rate, relative minimal distance). The central problem of the theory of such codes consists in maximizing simultaneously the transmission rate of the code and the relative minimum Hamming distance between two different code words. The classical approach to this problem explored in vast literature consists in the inventing explicit constructions of "good codes" and comparing new classes of codes with earlier ones. Less classical approach studies the geometry of the whole set of code points (R,delta) (with q fixed), at first independently of its computability properties, and only afterwords turning to the problems of computability, analogies with statistical physics etc. The main purpose of this article consists in extending this latter strategy to domain of spherical codes. (Received January 05, 2019)