

1153-11-186

**Michel L Lapidus\*** ([lapidus@math.ucr.edu](mailto:lapidus@math.ucr.edu)), University of California, Riverside, Department of Mathematics, Skye Hall, 900 University Ave., Riverside, CA 92521-0135. *p-Adic Fractal Strings, Complex Dimensions, Self-Similarity and Fractal Tube Formulas.*

We survey joint work in [1-3], as well as in [4,5] (see also [6, Sect. 13.2]) on p-adic fractal strings and their complex dimensions (i.e, the poles of the associated geometric zeta functions). We establish, in particular, fractal tube formulas enabling us to express the volume of the tubular neighborhoods as fractal power series with exponents the underlying complex (co-)dimensions. We discuss the important special case of p-adic self-similar strings, which are always lattice strings and hence, have (multiplicatively) periodic oscillations in their geometry. References: [1] M. L. Lapidus & H. Lu, Nonarchimedean Cantor set and string, *J. Fixed Point Theory and Appl.*, 3 (2008), 181-190. (V. Arnold's Jubilee.) [2] MLL & HL, Self-similar p-adic fractal strings and their complex dimensions, *p-Adic Numbers, Ultrametric Anal. Appl.* 1 (2009), 167-180. [3] MLL & HL, *Contemp. Math.*, vol. 551, AMS, 2011, pp. 163-206. [4] MLL, HL & M. van Frankenhuysen, *Contemp. Math.*, vol. 600, AMS, 2013, pp. 161-184. [5] MLL, HL & MvF, Minkowski dimension and explicit tube formulas for p-adic fractal strings, *Fractal and Fractional*, No. 4., 2 (2018), 26th paper. [6] MLL and MvF, *Fractal Geometry, Complex Dimensions and Zeta Functions*, 2nd edn., Springer, 2013. (Received August 27, 2019)