1154-51-596 **Michel L Lapidus*** (lapidus@math.ucr.edu), University of California, Riverside, Department of Mathematics, Skye Hall, 900 University Ave., Riverside, CA 92521-0135. *Fractal Complex Dimensions and Zeta Functions, With Applications to Fractal Geometry.*

We give an overview of some of the results obtained by the author and his collaborators in developing the theory of fractal complex dimensions (see, e.g., [1]-[3]), which generalize to the complex domain the notion of Minkowski (or box) dimension. Complex dimensions are defined as the singularities (e.g., poles) of analytic continuations of fractal zeta functions associated with arbitrary bounded subsets of Euclidean spaces. Examples of applications include various characterizations of Minkowski measurability, along with fractal tube formulas (which enable us to detect and precisely express the oscillations that are intrinsic to fractal geometries). If time permits, we also plan to discuss several open problems in this area. References: [1] M. L. Lapidus and M. van Frankenhuijsen, Fractal Geometry, Complex Dimensions and Zeta Functions, 2nd edn., Springer, 2013. [2] M. L. Lapidus, G. Radunovic and D. Zubrinic, Fractal Zeta Functions and Fractal Drums: Higher-Dimensional Theory of Complex Dimensions, Springer, 2017. [3] M. L. Lapidus, An Overview of Complex Dimensions: From Fractal Strings to Fractal Drums, and Back, Contemp. Math. (AMS), 731 (2019), 143-265. (Received September 08, 2019)