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Michel L Lapidus and **Sean Watson*** (watson@math.ucr.edu). *Fractal geometry and complex dimensions in Ahlfors regular spaces*. Preliminary report.

While classical analysis dealt primarily with smooth spaces, much research has been done in the last half century on expanding the theory to the nonsmooth case. Metric Measure (MM) spaces are the natural setting for such analysis, and it is thus important to understand the geometry of subsets of these spaces. Our talk will focus on the geometry of MM-spaces under additional regularity conditions, the Ahlfors regular spaces. Historically, fractals have been studied using different ideas of dimension, such as the Minkowski and Hausdorff dimensions, which have all proven to be unsatisfactory to some degree. We offer a brief overview of the theory of complex dimensions, developed by Lapidus and a number of collaborators, in an effort to better understand fractality in the Euclidean case and which seeks to overcome these problems. Of particular interest is the recent theory of complex dimensions in higher-dimensional Euclidean spaces, as studied by M.L.L., G. Radunovic, and D. Zubrinic. We will then show that this new theory of complex dimensions naturally generalizes to the case of Ahlfors regular spaces, along with illustrative examples from a selection of such spaces. (Received September 19, 2015)